

CORRECTIVE ACTION PLAN FOR

ATLANTIC RICHFIELD COMPANY

ARCO Facility #1919

660 Via de la Valle

Solana Beach, California

SAM Case #H05166-002

October 21, 2005

SECOR Project No. 08BP.01919.07

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1.0 INTRODUCTION

SECOR International Incorporated (SECOR), on behalf of Atlantic Richfield Company, has prepared this Corrective Action Plan (CAP) for ARCO Facility #1919 located at 660 Via de la Valle, in Solana Beach, California (Figures 1 and 2). The CAP was requested by the County of San Diego Department of Environmental Health, Site Assessment and Mitigation Program (SAM), in a letter dated July 21, 2005. The CAP provides a summary of assessment information for the site and an evaluation of, and recommendations for, remediation of hydrocarbon-impacted soil and groundwater at the site. The CAP has been prepared in general accordance with the SAM Manual (2004) and the requirements of California Code of Regulations Title 23, Division 3, Chapter 16, Article 11.

2.0 SITE BACKGROUND

2.1 SITE IDENTIFICATION

- a) Site Address: ARCO Facility #1919
660 Via de la Valle
Solana Beach, California 92075
- b) Current Site Use: Gasoline Service Station/Retail Store (ARCO Facility #1919)
- c) Assessor's Parcel No.: 298-270-24
- d) Property Owner: Sumeet Parekh & Sanjay Parekh,
Mark R. Brutten
P.O. Box 5015
Buena Park, CA 90622
- e) Responsible Party: Atlantic Richfield Company
4 Centerpointe Drive
La Palma, CA 90623
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- h) SAM Site #: #H05166-002

2.2 SITE DESCRIPTION AND USAGE

ARCO Facility #1919 is located at 660 Via de la Valle in Solana Beach, California, on the northeast corner of the intersection of Via de la Valle and Jimmy Durante Boulevard (Figure 2). The site is an active gasoline service station consisting of a single story structure containing an AM/PM market that is on an asphalt and concrete paved lot. The site fueling facilities include four USTs and six dispenser islands, each with one multi-product dispenser. The site is bordered by Valley Avenue to the west, Highland Drive to the northwest, PacLantic's Pacific View Center business complex to the north, an alley to the east, and Via de la Valle to the south. Bus parking for the Del Mar Fairgrounds and a Denny's restaurant are situated across Via de la Valle to the south. Access to the service station is by Via De La Valle from the south and Highland Drive from the northwest.

A review of the 1967 (photorevised 1975) U.S. Geological Survey (USGS) Del Mar, California, 7.5-minute quadrangle topographic map indicates that the site lies at an elevation of approximately 10 feet above mean sea level (MSL). The site is located at the north edge of the San Dieguito Valley and at the southwestern foot of a steep slope which reaches an elevation of 69 feet above MSL approximately 1,100 feet north of the site (Figure 1). The site is separated from the adjacent property to the north and east by retaining walls. The site and vicinity to the south, on the valley floor, slopes gently to the southwest toward the San Dieguito River, located approximately 2,800 feet to the south. The San Dieguito River discharges to the Pacific Ocean, located approximately 1 mile to the west of the site.

2.3 GEOLOGY

The site vicinity is underlain by Quaternary alluvium and Eocene marine sedimentary rocks. The Eocene marine sedimentary rocks in the vicinity of the site are comprised of the Rose Canyon Formation, the Torrey Sandstone, and the Delmar Formation. These units consist of siltstone and mudstone, gray shale, sandstone and conglomerates with thin beds of limestone and oyster beds (Kennedy, 1975). The site is immediately underlain by Quaternary undifferentiated alluvium and slope wash consisting of poorly to moderately consolidated deposits of clay, silt, sand, and trace gravel-sized particles derived from local bedrock sources. Based on soil boring logs from previous drilling events, the undifferentiated alluvium and slope wash materials consist primarily of poorly graded sand, and silt with occasional clayey lenses and extend to the depths of 17 feet bgs. Based on interpretation of boring logs, the Torrey Sandstone is estimated to underlie the site at depths greater than 15 feet bgs beneath the site and the general vicinity to the west and south. The hill north and east of the site, where the boring for well MW-26 was drilled, has a surface elevation of at least 13 feet higher than the other wells at the site and is underlain by Torrey Sandstone from near ground surface to at least the total well depth of 40.5 feet bgs. Torrey Sandstone under the site consists of silty sandstone and sandy siltstone. The general stratigraphy encountered during assessment drilling is included on borehole logs (Appendix A) and on Cross-Sections A-A' and B-B' referenced on Figure 3 and illustrated on Figures 4 and 5, respectively.

2.4 HYDROGEOLOGY

The site lies within the Rancho Santa Fe Hydrologic Subarea (905.11) of the Solana Beach Hydrologic Area (905.10) of the San Dieguito Hydrologic Unit (905.00). Groundwater in this hydrologic subarea has beneficial uses for municipal, agricultural, and industrial process supply but the beneficial uses do not apply to the site as stated by the California Regional Water Quality Control Board (CRWQCB) [CRWQCB, 1994] (Table 1). The site is located west of the Interstate Highway 5 and therefore is excepted from being a source of drinking water.

The San Dieguito Lagoon is located approximately one-half mile to the south of the site and flows from the east to the west (Figure 1). As shown on Table 1, the CRWQCB has designated the San Dieguito Lagoon as having beneficial uses of contact and non-contact water recreation; biological habitat of special significance; estuarine, marine, and wildlife habitat; and rare, threatened, or endangered species (CRWQCB, 1994). The San Dieguito River, which feeds into the lagoon approximately one-half mile southeast of the site, and the rivers tributary creeks that are located in this hydrologic subarea, are designated by the CRWQCB as having

beneficial uses of contact and non-contact water recreation, warm freshwater habitat and wildlife habitat; and potential uses of agricultural and industrial process supply.

As shown on Cross-Sections A-A' and B-B', groundwater is interpreted to occur within the alluvium and Torrey Sandstone (Figures 4 and 5). Most wells are screened within the alluvium only. The bottom of some well screen intervals penetrate into the Torrey Sandstone (e.g., MW-17). Well MW-26 is screened entirely within the Torrey Sandstone. Based on groundwater gauging, groundwater elevations appear to be similar in the alluvium and Torrey Sandstone, indicating high hydraulic connectivity between the geologic materials in the site area (Figures 4 and 5).

Based on quarterly monitoring events, groundwater beneath the site ranges from approximately 6 to 10 feet below ground surface (bgs) corresponding to elevations ranging from approximately 4 to 6 feet above mean sea level (MSL). Approximate groundwater flow direction is generally to the southwest. The groundwater gradient map for the third quarter 2005 event is presented as Figure 6 (SECOR, 2005).

2.5 LIMITED RECEPTOR SURVEY

SECOR conducted a limited potential sensitive receptor survey during 2004, which included governmental agency database and record inquiries and review, review of maps, and a site vicinity reconnaissance for wells and potential receptors (SECOR, 2004). SECOR personnel conducted a field reconnaissance February 10, 2004 to determine the presence or absence of potential sensitive receptors (e.g., schools and municipal or domestic production wells). A summary of the findings is presented below.

2.5.1 Adjacent Properties

The site vicinity generally consists of commercial use properties and the Del Mar Fair Grounds. The site is bordered by Valley Avenue Highland Drive to the northwest, PacLantic's Pacific View Center business complex to the north, an alley to the east, and Via de la Valle to the south. A restaurant is situated beyond Valley Avenue to the west. Bus parking for the Del Mar Fairgrounds and a Denny's restaurant are situated across Via de la Valle to the south. Interstate 5 is situated on land east of the site. Potential sensitive receptors were not reported or observed on these properties.

2.5.2 Other Properties

Four schools (St. James Catholic Community School, Santa Fe Christian Schools, St. Leos Mission and the Santa Fe Montessori School) are located within a one-mile radius. The schools are located up-gradient and greater than one-half mile from the subject site, and therefore are not likely to be impacted from the site.

2.5.3 Groundwater Production Wells

SECOR contacted the San Dieguito Water District, City of Del Mar, the California Department of Water Resources, and the manager of the Del Mar Fairgrounds/Racetrack to inquire the presence of water supply wells within a one-mile radius or at the Fairgrounds. Additionally, SECOR reviewed the following documents: Private Water List (database reviewed at offices of DEH); Banks Information Solutions Inc. Water Well Report (Appendix B); Geo Tracker™; and the USGS Del Mar California quadrangle topographic map (USGS 1967, photo revised in 1975) and the USGS web site. Based on the database search, inquiries, and site reconnaissance there are no reported groundwater production wells exist within one-mile radius of the site. Production wells were not observed during the site reconnaissance.

2.5.4 Surface Water

The site is located approximately 2,800 feet north of the San Dieguito River. The San Dieguito River, identified by the CRWQCB as having beneficial uses defined as a “coastal surface water” (Table 1), flows westward into the San Dieguito Lagoon and then into the Pacific Ocean, approximately 1 mile west of the site. Other surface water bodies were reported or observed within one-half mile of the site. Based on the distance to the San Dieguito River it is unlikely that it will be impact by the site.

2.5.5 Environmentally Sensitive Receptors

The San Dieguito River is designated by the CRWQCB as having beneficial uses of contact and non-contact water recreation, warm freshwater habitat and wildlife habitat; and potential uses of agricultural and industrial process supply. The CRWQCB has designated the San Dieguito Lagoon as having beneficial uses of contact and non-contact water recreation; biological habitat of special significance; estuarine, marine, and wildlife habitat; and rare, threatened, or endangered species, migration of aquatic organisms (Table 1; CRWQCB, 1994). Based on the distance to the San Dieguito River and Lagoon, it is unlikely that these areas will be impacted by the site.

2.6 PREVIOUS ENVIRONMENTAL ACTIVITIES

In Fall 1990, on-site assessment began with the drilling of six hand auger borings (PL-1 through PL-6) and nine hollow-stem auger borings (B-1 through B-9), eight of which were converted to monitoring wells designated MW-1 through MW-8 (Alton, 1991). Locations of the previous hand auger borings are shown on Alton’s Figure 3a presented in Appendix B, and the locations of the hollow stem auger borings/wells are shown on Figures 2 and 3. Based on analytical results, Alton estimated hydrocarbon-impacted soil extended to approximately 3 feet below groundwater in the former UST location (see Table 2 and Alton’s Figures 4 in Appendix B). Petroleum hydrocarbons were reported in soil to the southwest and northeast of the former USTs and below product lines. Liquid-phase petroleum hydrocarbon (LPH) was reportedly measured in wells MW-1, MW-4, MW-5, and MW-8 (Table 3).

In February 1991, Alton performed an aquifer pump test, which included step-drawdown and slug-injection tests. Well MW-6 was used for the step drawdown aquifer test and wells MW-1

and MW-4 through MW-8 were used for the slug injection aquifer tests. Alton reported the following test results: the estimated hydraulic conductivity ranged from 4.2×10^{-3} to 1.2×10^{-2} foot per minute (ft/min); the estimated transmissivity ranged from 3.8×10^{-2} to 2.0×10^{-1} foot squared per minute (ft²/min); and storage values ranged from 8×10^{-5} to 1×10^{-2} . Specific yield was reported as at least 0.1 (Alton, 1993a). The pumping rate of 3.1 gallons per minute (gpm) had an efficiency of 70%, and at 1 gpm efficiency was 93%. Alton predicted that the single-well pumping rates of 0.45 and 0.9 gpm for 2 and 4 feet of drawdown at efficiencies greater than 95% after 30 days. Alton also concluded that there was no relationship between groundwater fluctuations at the site and marine tidal pulses.

In May 1991, Alton conducted a soil vapor extraction (SVE) pilot test. The results were documented in Alton's "Subsurface Testing Report" dated March 10, 1993 (Alton, 1993a). Well MW-8 was used as an air injection well with wells MW-1, MW-2, and MW-5 as observation wells for SVE pilot testing. In addition, vapor samples were collected from wells MW-1 through MW-8 prior to air injection. Alton estimated SVE from one well at 50 scfm would produce a radius of influence of 70 feet.

December 1991 through May 1993 weekly remedial events to remove LPH using a vacuum pump truck. These activities were discontinued due to low LPH recovery (Alton, 1994b). An estimated 180 gallons of LPH were recovered from these events.

In February 1992, Alton drilled and sampled seven soil borings (B-10 through B-16) and completed them as groundwater monitoring wells, designated MW-10 through MW-16 for the purpose of further on-site and off-site assessment (Alton, 1992a). Soil sample analytical results are summarized in Table 2 and on Figure 3. Quarterly groundwater sampling commenced with the installation of these seven wells. Measured LPH thicknesses were reported to range from 0.01 to 0.96 foot in wells MW-1, MW-4, MW-5, MW-7, and MW-8 (Table 3).

In July 1992, additional site characterization was conducted with the installation of three additional monitoring wells, MW-17, MW-18, and MW-19 (later designated MW-19A; Alton, 1992d). Soil sample analytical results are shown in Table 2 and on Figures 3 and/or 7. An additional off-site monitoring well was planned to be installed on the adjacent property to the north, on PacLantic's Pacific View Centre, but Alton did not receive access authorization.

In August 1992, Alton collected four soil samples from one hand auger boring (HA-7) to investigate a reported product line leak (Alton, 1992c). Soil sample analytical results are shown in Table 2 and the location of HA-7 is shown on Alton Figure 3a in Appendix B. Gasoline-range organics carbon-chain range from C₆ through C₁₂ (GRO)¹ was reported in samples from 1.8 to 8.8 feet below ground surface (bgs) ranging from 7,894 to 139,439 milligrams per kilogram (mg/kg).

In October 1993, Alton drilled and collected soil samples from borings B-20 through B-27 to further assess hydrocarbon impact prior to UST system replacement activities and to evaluate the feasibility of remediation by over-excavation (Alton, 1993b). Soil sample analytical results

¹ The results of California Department of Health Services Modified EPA Test Method 8015 are presently reported as gasoline-range organics C₆-C₁₂ (GRO). In the majority of referenced reports this analysis was reported as total petroleum hydrocarbons as gasoline [TPH or TPHg] without consistent definition of carbon chain range included. The terms GRO, TPH, and TPHg are used interchangeably herein.

are shown in Table 2 and on Figure 3. Alton concluded that over-excavation was not a viable remediation alternative. Prior to tank replacement activities, wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-7, MW-8, and MW-12 were properly destroyed due to the proximity of the wells to the planned fieldwork activities.

On October 15, 1993, one 8,000 gallon, two 6,000 gallon, and two 4,000 gallon USTs were removed from the site and replaced with the four currently existing 10,000 gallon USTs. Following UST system removal, soil samples designated PLA-1 through PLA-12 were collected in the vicinity of the former dispensers and analyzed for petroleum hydrocarbon constituents. Soil sample locations are shown on Alton's Figure 3a in Appendix B and the soil analytical results are summarized in Table 2.

In January 1994, during station reconstruction activities, one soil sample designated SR-1 was collected from the bottom of a trench and analyzed for petroleum hydrocarbon constituents. Soil analytical results are summarized in Table 2 and Alton's Figure 3a in Appendix B.

In early 1994, Alton installed piping for an SVE system and San Diego Gas & Electric (SDG&E) excavated a trench in Valley Avenue for electrical supply conduit to the station (Alton, 1994a). Alton collected three soil samples (TR-1, TR-2, and TR-3) from the off-site SDG&E trench.

In April 1994 Alton installed monitoring wells MW-19 (later designated MW-19B), MW-20, and MW-21 and vapor extraction wells VEW-26, VEW-27, and VEW-28 (Alton, 1994d). In June 1995, SECOR installed seven air sparge (AS) wells, SP-1 through SP-7. Soil sample locations are shown on Figures 3 and/or 7, and the soil analytical results are summarized in Table 2.

In 1995, SECOR began operation of the SVE system and brought the AS system on-line in 1999 (SECOR, 2000a). After concentrations decreased to near asymptotic levels, the AS/SVE remediation system was operated in pulse/direct ventilation mode until SECOR shut down the system on June 19, 2003, and has not been operated since. SECOR records indicate a total of 11,019 pounds of hydrocarbons were removed and destroyed during operation of the remediation system (SECOR, 2003b).

In July 2000, SECOR installed two additional monitoring wells designated MW-22 and MW-23 at the locations shown on Figure 7 (SECOR, 2000b). The purpose of these wells was to evaluate the downgradient extent of dissolved-phase petroleum hydrocarbons. Soil sample analytical results are summarized in Table 2 and on Figure 7.

In January 2003, SECOR performed oversight activities for the removal of six fuel dispensers and the associated product piping at the site (SECOR, 2003a). Six soil samples from beneath the former dispensers (D1 through D-6, Figure 8) and one from the product line trenches (PP-90°) were collected under the supervision and direction of the County of San Diego, Department of Environmental Health, Hazardous Materials Division (HMD) inspector. Additionally, four samples were collected from the soil stockpile for disposal characterization. The soil samples were analyzed for petroleum hydrocarbon constituents and analytical results are summarized on Table 2. Based on the soil sample analytical results, SECOR recommended no further assessment (SECOR, 2003a).

In October 2003, SECOR installed three additional monitoring wells designated MW-22 and MW-23 at the locations shown on Figure 7 (SECOR, 2004b). The purpose of these wells was to further evaluate the extent of downgradient, off-site dissolved-phase petroleum hydrocarbons and the presence and extent, if any, of dissolved petroleum hydrocarbons upgradient of the site. Soil sample analytical results are summarized in Table 2 and on Figure 7. SECOR also performed a limited sensitive receptor evaluation during 2004 and reported within the additional off-site assessment report. The receptor evaluation findings are summarized elsewhere herein.

Periodic groundwater monitoring and sampling began in the first quarter 1992 and has been conducted quarterly through the most recent sampling event on September 12, 2005. Historic groundwater gauging results are summarized in Table 3 and historical groundwater sample petroleum hydrocarbon and lead analytical results are summarized in Tables 4a and 4b. Groundwater elevations and the gradient have generally been consistent at the site; representative groundwater elevations and the gradient are illustrated on Figure 6 (third quarter of 2005 [September 12, 2005]). The historical distribution of dissolved GRO (TPHg), benzene and MTBE for select sampling events during 1996, 1998 and 2000, and the most recent event on September 12, 2005, are summarized in Figures 9A through 9D. Benzene and MTBE isoconcentration contours for select sampling events during 2001 and 2003 and the most recent event on September 12, 2005, are shown on Figures 10A through 10C.

On September 12th and 13th, 2005, SECOR collected additional groundwater samples during the third quarter 2005 monitoring and sampling event for analysis of baseline remediation by natural attenuation (RNA) indicator parameters (SECOR, 2005). The RNA data were used to evaluate whether or not natural attenuation of petroleum hydrocarbons is occurring at the site, at least in part as a result of biodegradation. Dissolved oxygen (DO), oxidation-reduction potential, pH, specific conductance, and temperature were measured using a downhole instrument. Groundwater samples were analyzed for nitrate (as nitrogen), sulfate, sulfide, total iron (used to calculate ferric iron concentrations), ferrous iron, methane, ammonia, and alkalinity. A summary of the baseline RNA indicator parameter analytical results and field measurements is presented in Table 5, and the distribution of select parameters is illustrated on Figure 11. GRO, BTEX, and MTBE analytical results from the third quarter 2005 groundwater sampling event are also included in Table 5 and on Figure 11 for comparison. As shown in Table 5 and/or on Figure 11, areas at the site with relatively higher petroleum hydrocarbon concentrations (or in close proximity and downgradient of these areas) generally coincide with areas with higher ferrous iron, sulfide, and methane concentrations, lower oxidation-reduction potentials, and lower DO and nitrate concentrations. This suggests that biodegradation of dissolved petroleum hydrocarbons at the site is occurring via aerobic respiration, denitrification, sulfate reduction, ferric-iron reduction, and methanogenesis.

3.0 ASSESSMENT OF IMPACTS

The purpose of this section is to (1) identify the contaminants of concern (COCs) present at the site; (2) discuss the chemical, physical, toxicological and environmental fate/transport characteristics of the COCs; and (3) describe the extent of COC impact to soil, groundwater, surface water, air and subsurface utilities at and near the site.

3.1 CONTAMINANTS OF CONCERN

Available information regarding past and present UST operations at the site indicates that the USTs were, and currently are, used for storing gasoline. Accordingly, laboratory analytical test methods during the site assessment activities addressed gasoline-related hydrocarbons and additives. Diesel has reportedly not been stored or sold at the site. Laboratory analysis of soil and groundwater samples during assessment identified gasoline as the principal COC at the site. Gasoline-related COCs that have been identified in soil and/or groundwater include GRO (TPHg), benzene, toluene, ethylbenzene, total xylenes (BTEX), methyl tertiary butyl ether (MTBE), tert-butyl alcohol (TBA), and several detected analytical results for tert-amyl methyl ether (TAME).

3.2 CONTAMINANT CHARACTERISTICS

Key chemical, physical, environmental fate/transport characteristics and relevant regulatory levels of the COCs are summarized in Table 6. Additional information on the COCs is summarized below.

3.2.1 Gasoline

Gasoline is a clear liquid with a characteristic odor that is used as a fuel for internal combustion engines and is a solvent. Gasoline is a flammable liquid and has a low solubility in water. Gasoline vapors are also flammable and may flash if an ignition source is present. Gasoline contains chemicals which are hazardous to human health and may cause cancer (NJDHSS). The primary COCs in gasoline that have been reported in samples from the site are discussed individually in the following paragraphs.

3.2.2 Benzene

Benzene is a colorless liquid with an aromatic odor. It is found in gasoline, is used in making other chemicals and is used as a solvent. Commercial use of benzene as a solvent is generally being phased out due to its toxicity. Benzene is flammable in liquid and vapor states and vapors may flash if an ignition source is present. Benzene is a carcinogen and mutagen which is readily absorbed through inhalation, ingestion and dermal pathways (NJDHSS).

3.2.3 Toluene

Toluene is a colorless liquid with a sweet, strong odor. It is present in gasoline and used in making other chemicals, perfumes, dyes and detergents. Toluene is flammable in liquid and

vapor states and vapors may flash if an ignition source is present. Toluene exposure may damage a developing fetus (NJDHSS).

3.2.4 Ethylbenzene

Ethylbenzene is a colorless liquid with an aromatic odor that is found in gasoline, used in the production of polymers and is used as a solvent. Ethylbenzene is flammable in liquid and vapor states, and vapors may flash if an ignition source is present. Long term exposure to ethylbenzene may cause damage to the liver. The State of California considers ethylbenzene to be a carcinogen.

3.2.5 Xylenes

Xylene isomers (meta-xylene, ortho-xylene and para-xylene) are clear liquids with strong odors. Xylenes are found in gasoline and used as solvents. Xylenes are flammable in liquid and vapor states, and vapors may flash if an ignition source is present. Long term exposure to xylenes may damage the liver and kidneys, and xylenes may damage a developing fetus (NJDHSS).

3.2.6 Methyl Tert-Butyl Ether

Methyl tert-butyl ether (MTBE) is a colorless liquid that has historically been used in gasoline as an octane booster and to reduce hazardous emissions from automobiles. MTBE is flammable in liquid and vapor states, and vapors may flash if an ignition source is present. Long-term exposure to MTBE may cause damage to the kidneys and is an animal carcinogen (Lyondell, 2003). The general use of MTBE in gasoline in the State of California was phased-out in 2003. The State of California considers MTBE a suspected human carcinogen based on carcinogenic effects observed in experimental animals (CalEPA, 1999).

3.2.7 Tert-Butanol

Tert-butanol (TBA) is an oily, colorless liquid or solid with a mothball-like odor. TBA is used as a solvent for pharmaceuticals, as a paint remover and as an additive in unleaded gasoline. TBA is flammable as a solid or liquid and poisonous gases may be produced in a fire. TBA is not listed as a carcinogen or known to adversely affect reproduction; however high levels of exposure to TBA may affect kidney and liver function and be a respiratory and dermal irritant (NJDHSS).

3.2.8 Tert-Amyl Methyl Ether

Tert-amyl methyl ether (TAME) is a colorless liquid that was historically used in gasoline as an octane booster and to reduce hazardous emissions from automobiles. TAME is flammable in liquid and vapor states, and vapors may flash if an ignition source is present. Adverse reproductive effects have been reported in animals. Chronic exposure will cause neurological degradation and/or abnormalities (Acros Organics N.V., 2002).

3.2.9 Fate, Transport and Persistence of Contaminants of Concern in the Environment

Chemical fate and transport in the environment is dependent on a variety of factors relating to the physical and chemical properties of the substance(s) released and the subsurface conditions at the release site. A full fate and transport analysis was beyond the scope of this document; however, a general discussion of fate and transport of the contaminants of concern is provided below. As discussed in the previous sections, benzene and MTBE are classified by the State of California as carcinogens and therefore represent the greatest potential risk to human health and the environment. Therefore, discussion of fate and transport and persistence in the environment will focus on these two compounds. Toluene, ethylbenzene, and xylene isomers are anticipated to behave similarly to benzene, while TBA and TAME are anticipated to behave more like MTBE.

A comparison of chemical properties of benzene and MTBE (Table 6) shows that MTBE is approximately 24 times more soluble in water than benzene and has a lower soil sorption coefficient (Koc). Therefore, when released into the environment MTBE is more likely to reach groundwater, and when groundwater is reached it is more readily transported with groundwater flow.

Biodegradation and chemical oxidation commonly occur in the subsurface and may act to reduce COC concentrations over time. Biodegradation occurs when microorganisms in the subsurface consume a chemical under aerobic or anaerobic conditions. The extent of biodegradation that occurs is dependent on the types of microorganisms that are present, site-specific environmental conditions, and the presence of sufficient nutrients to support the microorganisms. Benzene is reported to be readily biodegradable under aerobic conditions in surface water with a half-life ranging from as little as two days to 17 days; however, aerobic degradation is expected to occur more slowly in groundwater. Benzene biodegradation does not occur as readily under anaerobic conditions.

MTBE is not a naturally occurring substance. As a result, MTBE biodegradation rates are typically low compared to refined petroleum products. Studies have shown that MTBE can biodegrade at low to moderate rates resulting in residual TBA, which in turn is easily mineralized to CO₂ and H₂O. Once benzene has been removed, degradation rates for MTBE typically increase (Wilson et al, 2000). Other studies have shown that MTBE-degrading aerobic microbes are relatively uncommon in the subsurface at most sites and that addition of special cultures and nutrients may be necessary to encourage aerobic degradation of MTBE (Spinnler et al, 2001).

3.3 EXTENT OF HYDROCARBON IMPACTS TO SOIL

Based on historical soil assessment data, the area residual soil hydrocarbon impact, characterized by GRO (TPHg) concentrations greater than 100 mg/kg reported in analyzed soil samples, is located on the western half of the property and partially encroaches on the adjacent right-of-ways in a westerly direction. The estimated lateral extent of historical petroleum hydrocarbon-impacted soil is shown on Figure 3. Soil sampling locations and analytical results are summarized in Table 2 and on Figures 3 and 7.

As shown on Cross-Sections A-A' and B-B' (Figures 4 and 5), the estimated vertical extent of historical soil impact is between 7 and 12 feet bgs in the area of the water table. Using the above lateral and vertical limits, the estimated volume of soil historically containing petroleum hydrocarbons, in concentrations greater than 100 mg/kg GRO (TPHg), is approximately 2,300 cubic yards. However, this estimate is based on analytical data collected prior to operation of the AS/SVE system and may not represent the existing geometry of residual soil hydrocarbon impact, which is more likely to be smaller in volume.

3.4 EXTENT OF HYDROCARBON IMPACTS TO GROUNDWATER

Historically, dissolved hydrocarbons have been reported in groundwater samples collected from 24 of the 26 wells. The greatest reported GRO, benzene, and MTBE concentrations prior to remediation activities were 120,000 µg/L (MW-15 on September 2, 1993), 15,000 µg/L (MW-17 on March 23, 1998 and MW-19B on September 28, 1994), and 210,000 µg/L (MW-15; March 20, 1997), respectively (Table 4A). Since the second quarter of 2004 (several quarters following remedial system shut-down), 11 of the remaining 17 wells (9 destroyed in 1993 due to upgrade activities) have not had GRO or benzene detected above laboratory reporting limits. Additionally, GRO and benzene have not been reported above laboratory reporting limits in downgradient wells MW-19A, MW-22, MW-24, or MW-25. Since the second quarter of 2004, MTBE has not been detected above reporting limits in eight of the remaining 17 wells.

Based on groundwater sample analytical results collected to date, the limits of the dissolved benzene and MTBE plumes are effectively defined within practical limits. Benzene and MTBE concentrations have generally decreased over time in the wells with historical reported concentrations. GRO and Benzene concentrations have not been detected in the most downgradient wells (MW-19A, MW-22, MW-24, and MW-25); therefore, it does not appear that the dissolved GRO and benzene plumes are migrating. MTBE concentrations have been detected in some of the same downgradient wells; however, MTBE concentrations in downgradient wells have generally decreased over time.

Historic groundwater gauging results are summarized in Table 3 and historical groundwater sample petroleum hydrocarbon analytical results are summarized in Tables 4a and 4b. Groundwater elevations and the gradient have generally been consistent at the site; representative groundwater elevations and the gradient are illustrated on Figure 6 (third quarter of 2005 [September 12, 2005]). The historical distribution of dissolved GRO (TPHg), benzene and MTBE for select sampling events during 1996, 1998 and 2000, and the most recent event on September 12, 2005, are summarized in Figures 9A through 9D. Benzene and MTBE isoconcentration contours for select sampling events during 2001 and 2003 and the most recent event on September 12, 2005, are shown on Figures 10A through 10C.

3.5 POTENTIAL FOR COC MIGRATION DUE TO SUBSURFACE UTILITIES

Man-made pathways for potential COC migration are located on site and in the site vicinity. The pathways are subsurface utilities that may include cable, electricity, gas, phone, sewer, storm drain, and water conduits. The depth of utilities in general are buried in trenches at depths ranging from 1.5 to 8 feet bgs. Because depth to water beneath the site and vicinity ranges between approximately 6 and 10 feet bgs, the subsurface utilities may act as migration pathways for hydrocarbons in groundwater.

3.6 EXPOSURE PATHWAYS

Based on existing site conditions, the only potentially complete exposure pathways for the subject site are (1) ingestion of impacted groundwater; (2) vapor inhalation due to COC volatilization from impacted soil or groundwater below the site and adjacent sites; (3) impact to environmental receptors; (4) ingestion of impacted soil and dust; and (5) dermal contact with impacted soils. These potential exposure pathways are evaluated below.

Due to saltwater intrusion into the shallow groundwater aquifer from the Pacific Ocean to the west of the site, groundwater in the site vicinity and generally to the west of Interstate 5 is not currently used for municipal supply. Also, as noted in the Limited Receptor Survey in Section 2.5 above, no public wells were identified within one mile of the site. Therefore, this exposure pathway is incomplete.

The presence of hydrocarbons, particularly benzene and MTBE, in soil and groundwater beneath the site represents a potential complete vapor inhalation exposure pathway. In this pathway the COCs would volatilize from impacted soil and groundwater. The resulting hydrocarbon vapors would then migrate vertically through the subsurface soil and asphalt or concrete surface into the breathing zone at the site. Known areas of soil and groundwater impact below the site are located approximately 30 to 40 feet away from enclosed structures at the site. The known areas of soil and groundwater impact off-site are concentrated below the intersection of Via de la Valle and Jimmy Durante Boulevard and are not located beneath enclosed structures. As a result hydrocarbon vapors that migrate to the surface would tend to become diluted with outdoor air and dispersed by winds. Therefore, due to the existing on and off-site conditions and site use, the level of risk posed by the vapor inhalation exposure route is low. If site use was to change and enclosed structures were to be placed over the hydrocarbon-impacted areas, then the level of risk due to this exposure pathway may increase.

The San Dieguito River and San Dieguito Lagoon, located approximately one-half mile south of the site, are the nearest downgradient surface water receptors. Groundwater samples collected from the furthest downgradient well (MW-22; approximately 345 feet south the site) during the second and third quarterly monitoring periods of 2005 have revealed that MTBE impact is present at levels near or below the California primary maximum contaminant level of 13 µg/L. MTBE concentrations have generally been decreasing over time downgradient of the site, therefore, this pathway is incomplete.

During normal site operations, exposure to impacted soil and/or dust is unlikely to occur because the site is predominantly covered with asphalt and concrete. The potential exists if future work is performed that involves the disturbance of subsurface soil at the site or in the site vicinity. The potential for contaminant exposure during activities can be minimized through worker safety training, dust control, and the use of personal protective equipment.

4.0 DETERMINATION OF APPLICABLE CLEANUP LEVELS

SECOR proposes soil and groundwater cleanup goals that are protective of human health and the environment.

4.1 SOIL

SECOR proposes soil cleanup goals that are protective of current and future beneficial groundwater uses and human health and safety. Specific numeric cleanup goals have not been developed for this site.

4.2 GROUNDWATER

To protect current and potential future beneficial uses of groundwater and surface water in the vicinity, long-term cleanup levels that are protective of human health and the environment will be applied. These long-term groundwater cleanup goals are presented in the table below:

Applicable Groundwater Cleanup Levels – Potential Future Use as Municipal Drinking Water Supply	
Chemical	Target Concentration (µg/L)
Benzene	1 – California primary maximum contaminant level (MCL)
Toluene	150 - California primary MCL
Ethylbenzene	300 - California primary MCL
Xylenes	1,750 - California primary MCL
MTBE	13 – California primary MCL
TBA	12 – California State action level

5.0 FEASIBILITY STUDY

The purpose of this section is to evaluate alternative site remediation strategies for appropriateness and cost-effectiveness. Based on the evaluation, the most appropriate and most cost-effective strategy will be selected for implementation at the site. The main focus is the long-term protection of current and future beneficial groundwater uses in the area, with MTBE being the primary COC. The remedial strategy to be implemented will be chosen based on the following objectives (listed in order of importance):

1. Stop migration of the dissolved-phase hydrocarbon groundwater plume.
2. Reduce the concentration of dissolved-phase hydrocarbons in groundwater to levels that are protective of current and future beneficial uses.
3. Reduce the source mass of hydrocarbons in vadose zone and capillary-fringe soil.

5.1 REMEDIAL TECHNOLOGY SCREENING

A list of proven remedial technologies was screened for applicability at the site. A remedial technology screening matrix is presented as Table 7. Site-specific conditions that involve impact to soil and groundwater were considered for the initial screening of corrective action technologies. Technologies that passed the initial screening are listed below:

- Pump-and-Treat
- Excavation and Off-Site Disposal
- Soil Vapor Extraction (SVE)
- Dual-Phase Extraction (DPE)
- Air Sparging (AS) w/ SVE
- In-Situ Enhanced Bioremediation
- Bioventing
- Biosparging
- In-Situ Chemical Oxidation (ISCO)
- Remediation by Natural Attenuation (RNA)

5.2 REMEDIAL ALTERNATIVES

The remedial technologies that passed the initial screening were used to develop three remedial alternatives that, in SECOR's opinion, can best achieve the remedial goals. These alternatives are described below.

5.2.1 Alternative 1 – Remediation by Natural Attenuation (RNA)

RNA is a passive remedial method that involves no active remediation. RNA is a multi-component process that incorporates biological mechanisms (biodegradation), chemical mechanisms (oxidation and hydrolysis), and physical mechanisms (dispersion, volatilization, and sorption). Groundwater monitoring data (Table 4A) show that dissolved benzene and MTBE concentrations have continued to decrease. This suggests that the remaining dissolved hydrocarbon concentrations in groundwater are currently being reduced through the processes

of natural attenuation. Additionally, on September 12 and 13, 2005, SECOR collected and submitted groundwater samples for evaluation of baseline RNA indicator parameters. An evaluation of this data (Section 2.6) suggested that RNA is occurring in groundwater below the site. RNA involves no further active remediation, and no further monitoring of groundwater. This remediation method is the most cost-effective of the three proposed alternatives at \$0 (Table 8).

5.2.2 Alternative 2 - In-Situ Air Sparging (AS) w/ Soil Vapor Extraction (SVE)

This alternative would use AS and SVE to remediate the saturated and unsaturated soil zone. The SVE system would consist of a 10-horsepower vacuum blower connected to approximately six on-site wells and six off-site wells. The AS system would consist of a 10-horsepower rotary screw air compressor connected to approximately six on-site and six off-site air sparging wells. The SVE and AS wells would be connected to the on-site treatment equipment compound by below-grade piping. The extracted soil vapor would be treated using a catalytic oxidation system. Treated soil vapor would be discharged under permit to the atmosphere. In later stages of the project, the oxidation system could be replaced by activated carbon adsorbers. This system would also promote biostimulation by increasing the dissolved oxygen in the groundwater.

The AS and SVE equipment, and a portion of the necessary below grade piping for this alternative are already in place as on-site AS/SVE was performed at the site from 1995 to 2003. The main capital cost necessary for this alternative is the installation of six off-site AS/SVE wells, six additional on-site AS/SVE wells, and connecting below grade piping. It is expected that approximately 24 months of AS/SVE system operation would be required to lower dissolved hydrocarbons to asymptotic concentrations at which time the system could be shut down. The final goal, achieving groundwater MCLs, would be completed by RNA. The time required for this last step would be estimated after the shutdown of the AS/SVE system. The estimated cost for this alternative is approximately \$338,695 (Table 9).

5.2.3 Alternative 3 - In-Situ Chemical Oxidation (ISCO)

In this alternative a network of twelve sparge wells is installed across the plume area (approximately six on-site and six off-site within the intersection). An ozone generator system is connected to the wells by below grade piping and used to inject a mixture of air and ozone or oxygen and ozone into the sparging wells. The injected ozone directly oxidizes dissolved hydrocarbons in the groundwater, converting them to carbon dioxide and water. The injected ozone also increases dissolved oxygen levels in groundwater which promotes in-situ bioremediation of the hydrocarbons. The ozone sparging would be conducted at low flow rates (less than 4 cubic feet per minute) in a pulsed fashion. Based on results of previous SVE at the site, low flow ozone sparging is not expected to generate significant off-gassing of volatilized hydrocarbons. Therefore, no off site SVE system is proposed.

It is expected that approximately 12 months of ozone system operation would be required to lower dissolved hydrocarbons to asymptotic concentrations at which time the system could be shut down. The final goal, achieving groundwater MCLs, would be completed by RNA. The time required for this last step would be estimated after the shutdown of the ozone system. The estimated cost for this alternative is approximately \$270,302 (Table 10).

5.3 SELECTED REMEDIAL ALTERNATIVE

A comparison of the advantages and disadvantages of the proposed alternatives is provided in Table 11. After comparing the three alternatives it appears that all of the proposed alternatives would result in an adequate level of protection of human health, and protect the environment and beneficial uses of groundwater and surface water in the vicinity of the site. Each alternative would effectively reduce the remaining hydrocarbons in the subsurface over time, and each alternative is easy to implement. Most other factors in the matrix are also nearly equal in terms of short and long-term effectiveness of remediation, and impact to the surrounding community.

Given that all three of the proposed alternatives would be effective in reaching the cleanup goals, the selection process is narrowed down to a cost comparison (Table 11). Based on cost considerations, RNA is the preferred remedial alternative for the remaining hydrocarbon impact at the site.

6.0 ESTIMATED TIME FOR GROUNDWATER CONDITIONS TO REACH CLEANUP GOALS

This section provides an estimate of the time required for dissolved hydrocarbon concentrations in groundwater below the site to reach State of California primary drinking water MCLs by the processes of natural attenuation. Baseline RNA parameter testing results from the third quarter 2005 (September 2005) groundwater monitoring and sampling event indicate biodegradation is occurring at the site (see Section 2.6). In addition, periodic quarterly sampling analytical results indicate that the dissolved hydrocarbon plume below the site is shrinking and not migrating (Section 3.0). GRO and benzene concentrations have not been detected in the most downgradient wells (MW-19A, MW-22, MW-24, and MW-25); therefore, it does not appear that the dissolved GRO and benzene plumes are migrating. MTBE concentrations have been detected in some of the same downgradient wells; however, MTBE concentrations in downgradient wells have generally decreased over time.

As reported in the third quarter 2005 monitoring report for the site (samples collected on September 12th and 13th, 2005) there are currently 11 monitoring wells at the site (MW-6, MW-15 through MW-18, MW-19B, MW-21, MW-22, MW-24, and MW-25) that either historically or consistently contain dissolved benzene and/or MTBE above the State of California primary MCLs of 1.0 µg/L and 13 µg/L, respectively. Hydrocarbon concentrations in the other eight monitoring wells (MW-10, MW-11, MW-13, MW-14, MW-19A, MW-20, MW-23, and MW-26) have been near or below the MCLs for at least one year (or since the well was installed, in the case of MW-11, MW-14, MW-23, and MW-26). The most recent dissolved benzene and MTBE analytical results are summarized in Table 4A and on Figure 10C (note that some wells were not sampled during September 2005 due to the well sampling reduction program).

6.1 DATA ANALYSIS

It has been observed at fuel hydrocarbon sites that the attenuation of dissolved hydrocarbon concentrations generally follows a first-order decay trend once the majority of hydrocarbon source material has been removed. The following equation has been used to describe the observed concentration decrease at a point (e.g. monitoring well) within a dissolved hydrocarbon plume:

$$C = C_o e^{-kt}$$

Where: C = concentration at time t (µg/L)
C_o = peak concentration (µg/L)
k = overall attenuation rate constant (days⁻¹)
t = elapsed time after observation of peak concentration (days)

To estimate the time required for remaining dissolved-phase petroleum hydrocarbons beneath the site to attenuate to MCLs through RNA, SECOR used concentration trends of representative dissolved hydrocarbon compounds (benzene and MTBE) in key wells at the site to estimate site-specific first-order attenuation rate constants. The resulting rate constants were then used to extrapolate the estimated time required for remaining dissolved-phase hydrocarbons at the site to reach MCLs through RNA.

Based on their locations (cross and downgradient) and historical petroleum hydrocarbon concentration trends, wells MW-16 and MW-18 were selected to be representative key wells for estimating the attenuation rate constants for benzene and MTBE. The estimated attenuation rate constants were then applied to the wells with the highest recent benzene and MTBE concentrations to extrapolate the time required for these compounds to reach MCLs. Based on data for the past year, the two wells with the highest reported benzene concentrations are wells MW-15 (1,700 µg/L on September 13, 2005) and MW-21 (490 µg/L on March 8, 2005), located down and cross-gradient of the USTs, respectively. The two wells with the highest reported MTBE concentrations are wells MW-15 (16,000 µg/L on September 13, 2005) and MW-18 (4,300 µg/L on September 12, 2005). It is also noteworthy, that although well MW-16 has not been sampled in over one year, due to the well sampling reduction program and access restrictions, the most recent reported MTBE concentration in this well was 5,900 µg/L (February 25, 2004).

The benzene data set used for analysis from MW-16 ranges from the maximum reported concentration of 5,900 µg/L on September 28, 1994 to the most recent concentration detected above laboratory reporting limits of 26 µg/L on May 10, 2000. Dissolved benzene was not detected above reporting limits in samples collected from well MW-16 after May 2000. A semi-log plot of benzene concentration versus time for well MW-16 is presented as Figure 12A. A least-squares statistical method was used to calculate the best-fit line through the data set. The best-fit line and equation are included on Figure 12A. The slope of the best-fit line (0.0039 days^{-1}) is the estimated first-order attenuation rate constant for the data set. The first order decay equation and estimated rate constant was then used to extrapolate the time required for benzene concentrations to reach 1.0 µg/L. Using the estimated attenuation rate constant in well MW-16, benzene concentrations in the vicinity of wells MW-15 and MW-21 will reach 1 µg/L in approximately 5.12 and 3.73 years, respectively. A summary of the benzene concentration trend analysis for well MW-16, and extrapolation for wells MW-15 and MW-21 is provided in Table 12.

The MTBE data set used for analysis from MW-16 ranges from the maximum reported concentration (45,000 µg/L on March 20, 1997) to the most recent result (5,900 µg/L on February 25, 2004). A semi-log plot of MTBE concentration versus time for well MW-16 is presented as Figure 12B, which includes the least-squares statistical method best-fit line and equation. The slope of the best-fit line (0.001 days^{-1}) is the estimated first-order attenuation rate constant for the data set. The first order decay equation and estimated rate constant was then used to extrapolate the time required for MTBE concentrations to reach 13.0 µg/L. Using the estimated attenuation rate constant in well MW-16, MTBE concentrations in the vicinity of wells MW-15 and MW-16 will reach 13.0 µg/L in approximately 19.39 and 13.73 years, respectively (Table 12).

The MTBE data set used for analysis from MW-18 ranges from the maximum reported concentration (11,000 µg/L on May 10, 2000) to the most recent result (4,300 µg/L on September 12, 2005). A semi-log plot of MTBE concentration versus time for well MW-16 is presented as Figure 12C, which includes the least-squares statistical method best-fit line and equation. The slope of the best-fit line (0.0006 days^{-1}) is the estimated first-order attenuation rate constant for the data set. The first order decay equation and estimated rate constant was then used to extrapolate the time required for MTBE concentrations to reach 13.0 µg/L. Using

the estimated attenuation rate constant in well MW-18, MTBE concentrations in the vicinity of wells MW-15 and MW-18 will reach 13.0 µg/L in approximately 32.39 and 25.33 years, respectively (Table 12).

6.2 ESTIMATED TIME TO REACH MCLS

Based on a review of the site data and experience at similar sites, it is estimated that groundwater concentrations below the site will reach MCLs in approximately 50 years. This estimate allows for a reasonable amount of uncertainty due to the possible presence of small pockets of residual hydrocarbons below the site that could result in future short-term concentration spikes. Also, this estimate does not account for the possibility of a future release at the site.

7.0 CORRECTIVE ACTION WORK PLAN

Based on the selection of Remedial Alternative 1 (RNA), no further active remediation would be required. A permit application for well destruction will be prepared following concurrence from SAM with this CAP and completion of the required 30-day public notification period.

8.0 VERIFICATION MONITORING AND REPORTING PLAN

Further monitoring and reporting are considered unnecessary at the site because RNA has been demonstrated by the existing monitoring program. It is SECOR's professional opinion that sufficient monitoring of the groundwater quality at the site has already occurred.

9.0 PUBLIC NOTIFICATION

A public notification program will be implemented as part of the Corrective Action Plan approval process. This program will include distribution of Public Notices to adjacent local businesses, residences and the local planning agency. The public notice will describe the proposed CAP and invite interested parties to review the CAP at a local library and/or the offices of the SAM. There will be a 30-day period for the public to review the CAP and to comment directly to the SAM.

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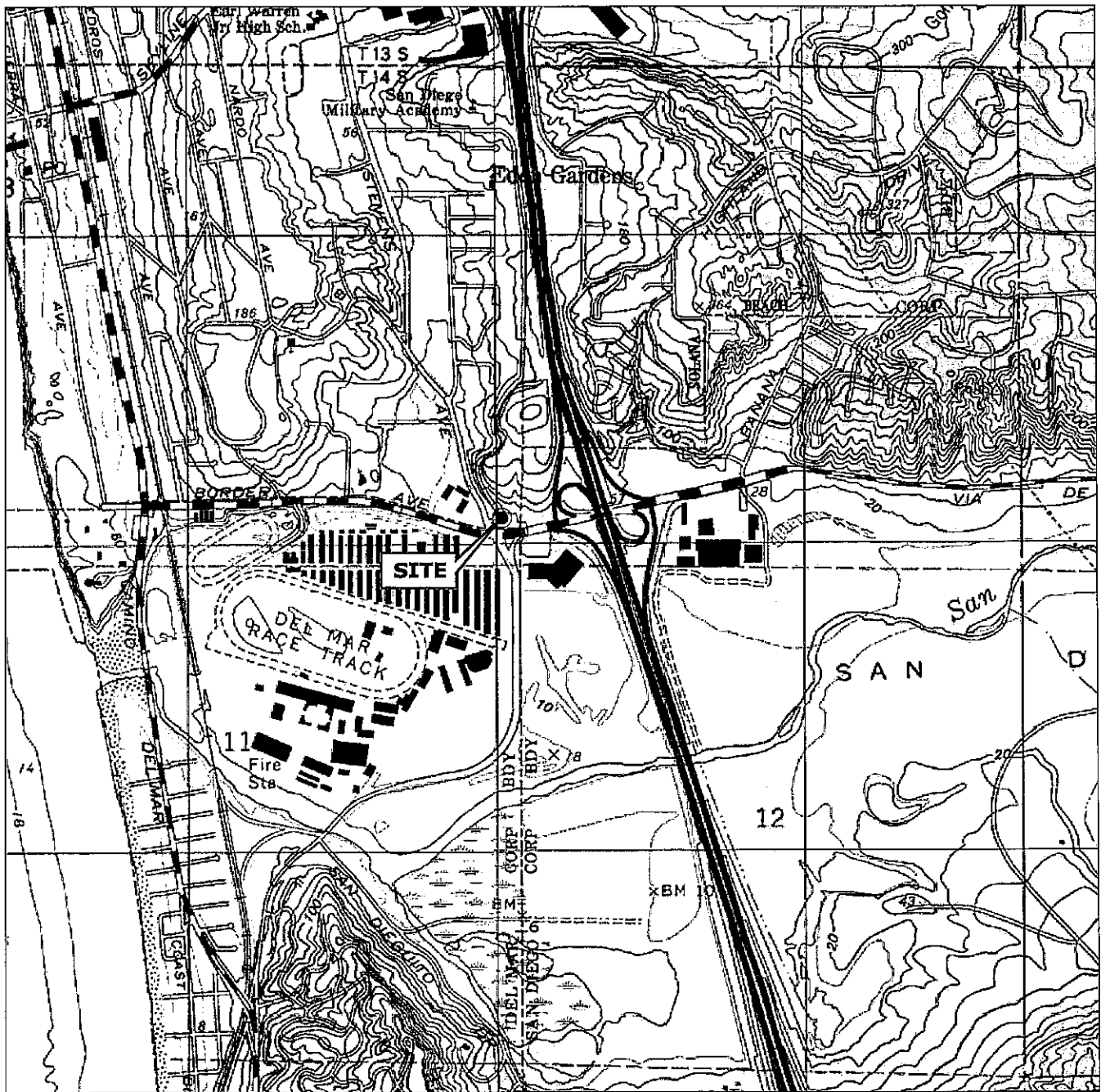
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FIGURES
CORRECTIVE ACTION PLAN
ATLANTIC RICHFIELD COMPANY
ARCO Facility #1919
660 Via de la Valle
Solana Beach, California
SAM Case #H05166-002
SECOR PROJECT NO. 08BP.01919.07
October 21, 2005



REFERENCE: PROFFESIONAL USGS TOPOGRAPHIC SERIES



0 2000 4000

APPROXIMATE SCALE IN FEET



SECOR

2655 CAMINO DEL RIO NORTH, SUITE 302
SAN DIEGO, CALIFORNIA
PHONE: (619) 296-6195/296-6199 (FAX)

FOR:

ARCO FACILITY #1919
660 VIA DE LA VALLE
SOLANA BEACH, CALIFORNIA

JOB NUMBER:

088P.U1919.05

DRAWN BY:

PD

CHECKED BY:

APPROVED BY:

FIGURE:

1

DATE:

10/12/05

DEL MAR FAIR GROUNDS
BUS PARKING

FISH MARKET
RESTAURANT

BUILDING

VALLEY AVENUE

HIGHLAND DR.

PACIFIC VIEW
CENTER

VIA DE LA VALLE

DENNY'S
RESTAURANT

JIMMY DURANTE BOULEVARD

LEGEND:

- MW-26 GROUNDWATER MONITORING WELL
- MW-12 DESTROYED MONITORING WELL
- RT-3 HORIZONTAL VAPOR EXTRACTION TRENCH
- VEW-29 VAPOR EXTRACTION WELL
- SP-6 SPARGE WELL
- STORM DRAIN
- LIGHT POLE
- UTILITY POLE
- AS ASPHALT SURFACE
- CS CONCRETE SURFACE
- USTs UNDERGROUND STORAGE TANKS

WELL	SCREEN	HOOKE UP TO SVE OR AS SYSTEM
VEW-26	5'-9.5'	YES
VEW-27	5'-9.5'	YES
VEW-28	5'-9.5'	YES
VEW-29	0.5'-15'	YES
RT-1	HORIZONTAL	YES
RT-2	HORIZONTAL	YES
RT-3	HORIZONTAL	YES
RT-4	HORIZONTAL	YES
RT-5	HORIZONTAL	YES
SP-1	13.5'-15'	YES
SP-2	13.5'-15'	YES
SP-3	13.5'-15'	YES
SP-4	13.5'-15'	YES
SP-5	13.5'-15'	YES
SP-6	13.5'-15'	NO
SP-7	13'-14.5'	NO
MW-6	7'-14'	NO
MW-10	7.5'-17.5'	NO
MW-11	9.5'-19.5'	NO
MW-13	5'-20'	NO
MW-14	7'-17'	NO
MW-15	6.5'-16.5'	NO
MW-16	7.5'-17.5'	NO
MW-17	4'-19'	NO
MW-18	4.5'-19.5'	NO
MW-19A	4.5'-19'	NO
MW-19B	5'-16'	NO
MW-20	5'-19'	NO
MW-21	5'-14'	NO
MW-22	5'-20'	NO
MW-23	5'-20'	NO
MW-24	2.5'-17.5'	NO
MW-25	2.5'-17.5'	NO
MW-26	19'-34'	NO

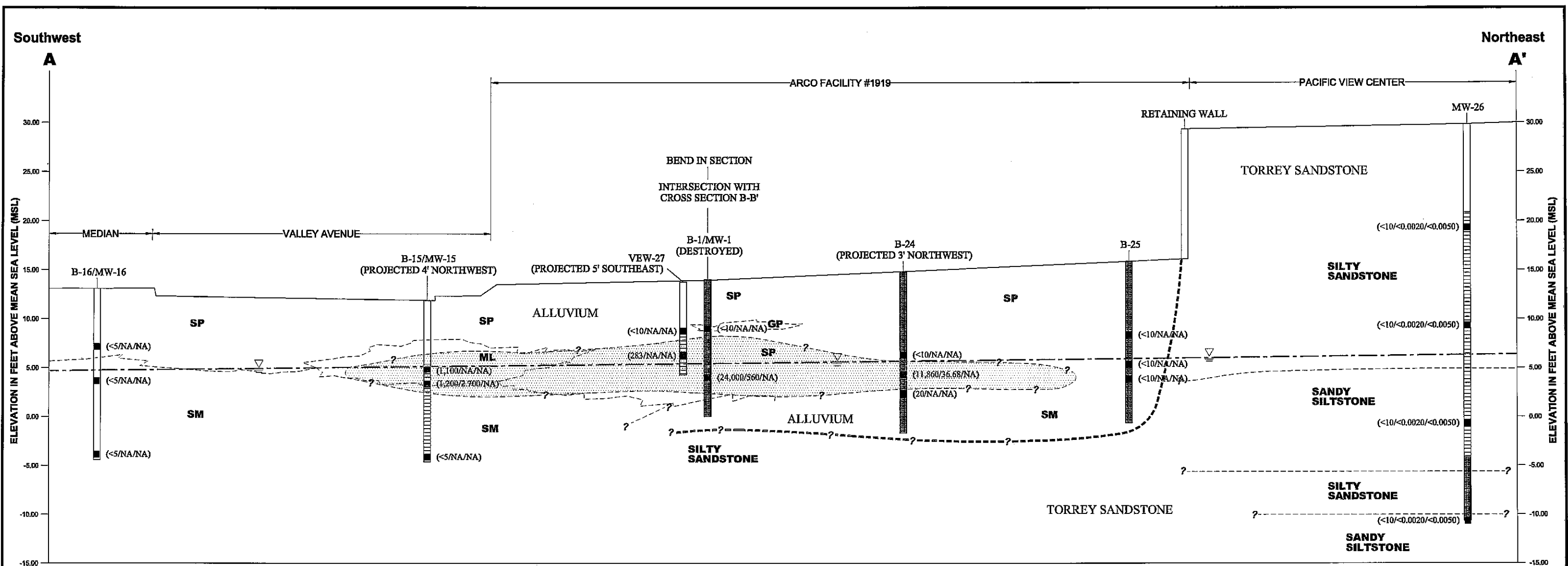
0 60 120
APPROXIMATE SCALE IN FEET

SOURCE: SOUTHERN CALIFORNIA SURVEY, SEPTEMBER 26, 2003

 SECOR 2655 Camino del Rio North, Suite 302 San Diego, California 619-296-6195/Fax 619-296-6199	PREPARED FOR: ARCO FACILITY #1919 660 Via de la Valle Solana Beach, California		SITE PLAN		FIGURE 2
	JOB NUMBER: 08BP.01918.03	DRAWN BY: RJO	CHECKED BY:	APPROVED BY:	DATE: 10/21/03

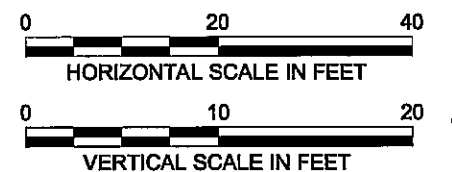
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1919SUR10-03.DWG



LEGEND:

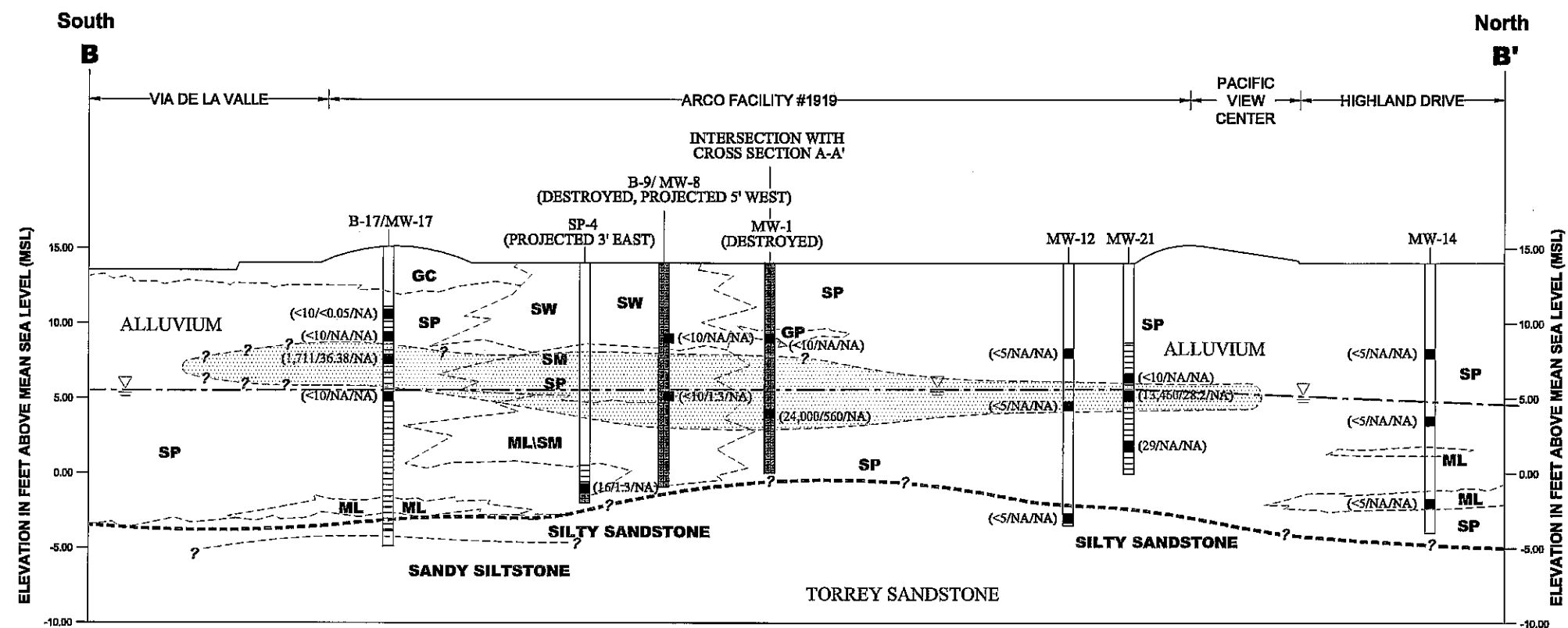
- | | |
|--|--|
| <p>MW-16 BORING/WELL IDENTIFICATION</p> <ul style="list-style-type: none"> -INDICATES BACKFILLED BOREHOLE -BLANK PVC CASING INTERVAL -SCREENED PVC WELL INTERVAL <p>($<10/<0.050/<0.010$)</p> <p>■ SOIL SAMPLE LOCATION WITH TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (TPHg)*, BENZENE, AND METHYL TERT-BUTYL ETHER (MTBE) CONCENTRATIONS MEASURED IN MILLIGRAMS PER KILOGRAM (mg/kg).</p> <p>* TPHg IS ALSO DESCRIBED AS GASOLINE-RANGE ORGANICS C₈-C₁₂ (GRO)</p> <p>■ SOIL SAMPLE LOCATION AND IDENTIFICATION</p> <p>ND NOT DETECTED</p> <p>NA NOT ANALYZED</p> <p>< LESS THAN REPORTING LIMIT INDICATED</p> <p>?----- INFERRED SOIL/ LITHOLOGIC CONTACT (QUERIED WHERE UNKNOWN)</p> <p>?----- INFERRED GEOLOGIC CONTACT (QUERIED WHERE UNKNOWN)</p> <p>--△-- APPROXIMATE DEPTH TO GROUNDWATER ON JUNE 21, 2004</p> | <p>ESTIMATED EXTENT OF RESIDUAL PETROLEUM HYDROCARBONS IN SOIL (TPHg ≥ 100mg/kg) PRIOR TO START UP OF SOIL AND GROUNDWATER REMEDIATION SYSTEM IN 1995</p> <p>GP POORLY GRADED GRAVEL</p> <p>SP POORLY GRADED SAND, GRAVELLY POORLY GRADED SAND</p> <p>SM SILTY SAND</p> <p>ML SILT, GRAVELLY SILT</p> |
|--|--|



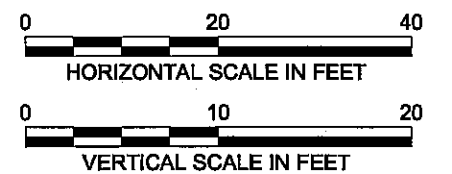
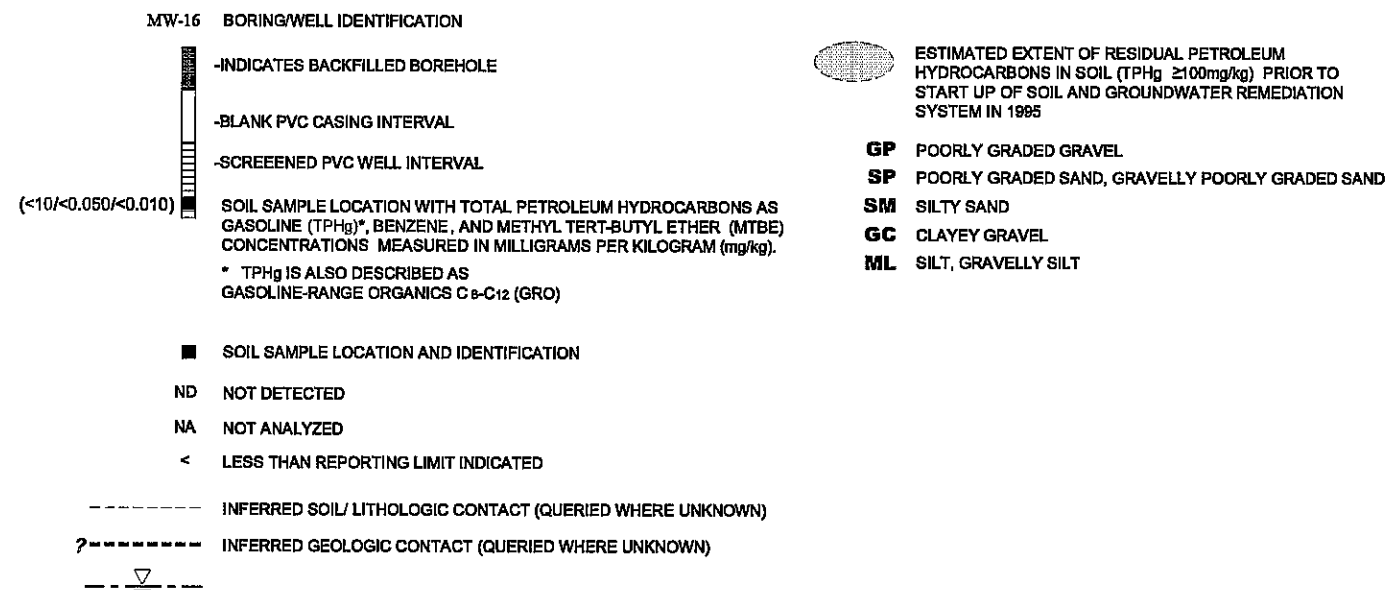
 SECOR 2655 Camino del Rio North, Suite 302 San Diego, California 619-296-6195/Fax 619-296-6199	PREPARED FOR: ARCO FACILITY #1919 660 Via de la Valle Solana Beach, California		GEOLOGIC CROSS SECTION A-A'		FIGURE 4
	JOB NUMBER: 06BP.01919.04	DRAWN BY: PD	CHECKED BY: MG	APPROVED BY: BGE	DATE: 5/3/04

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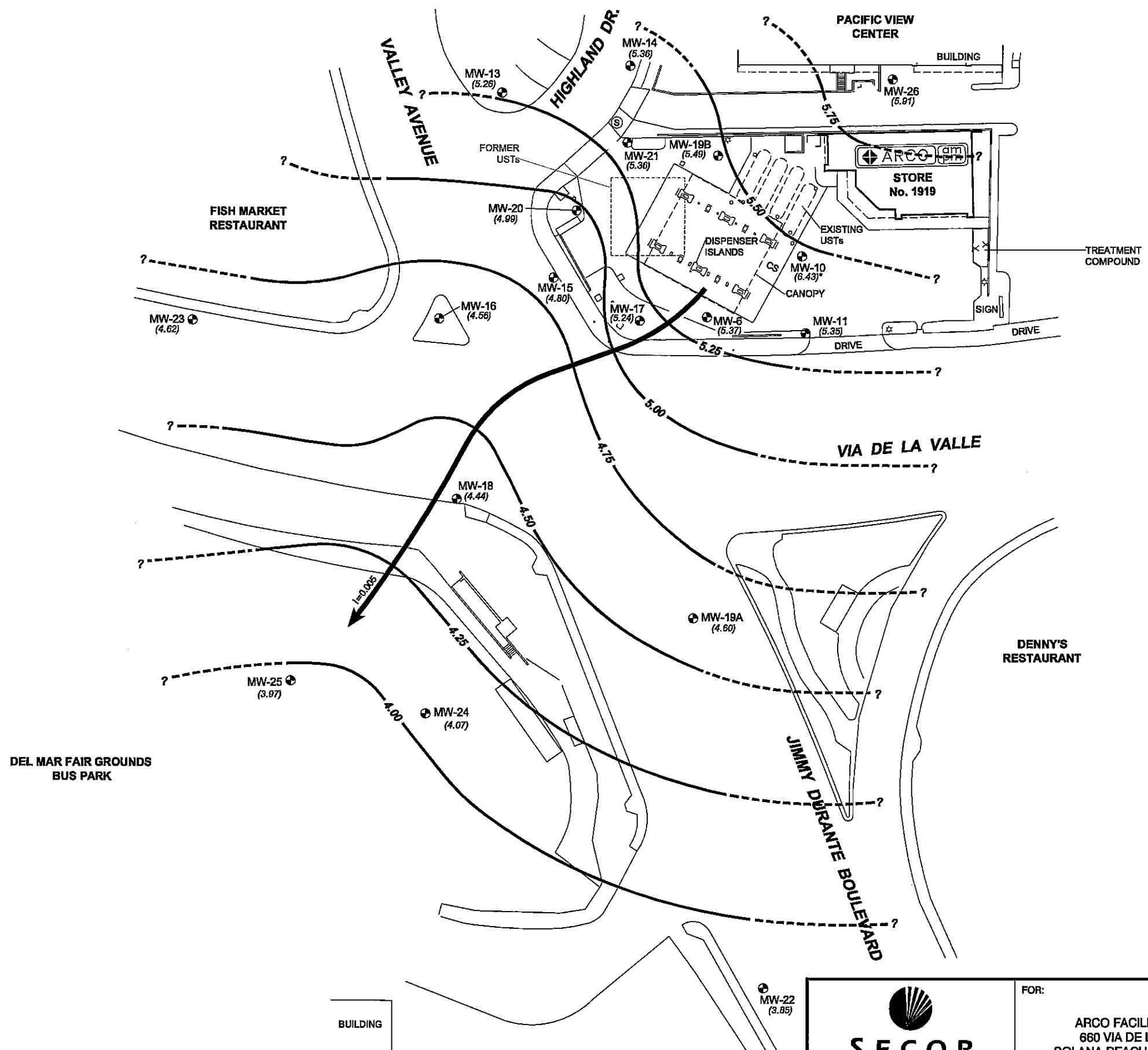
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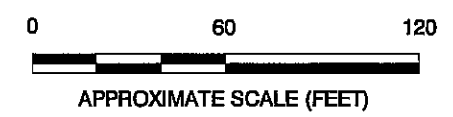
LEGEND:



<p>2655 Camino del Rio North, Suite 302 San Diego, California 619-296-6195/Fax 619-296-6199</p>	PREPARED FOR:		GEOLOGIC CROSS SECTION B-B'		FIGURE
	ARCO FACILITY #1919 660 Via de la Valle Solana Beach, California				5
JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:	
08BP.01919.04	PD	MG	BGE	5/3/04	

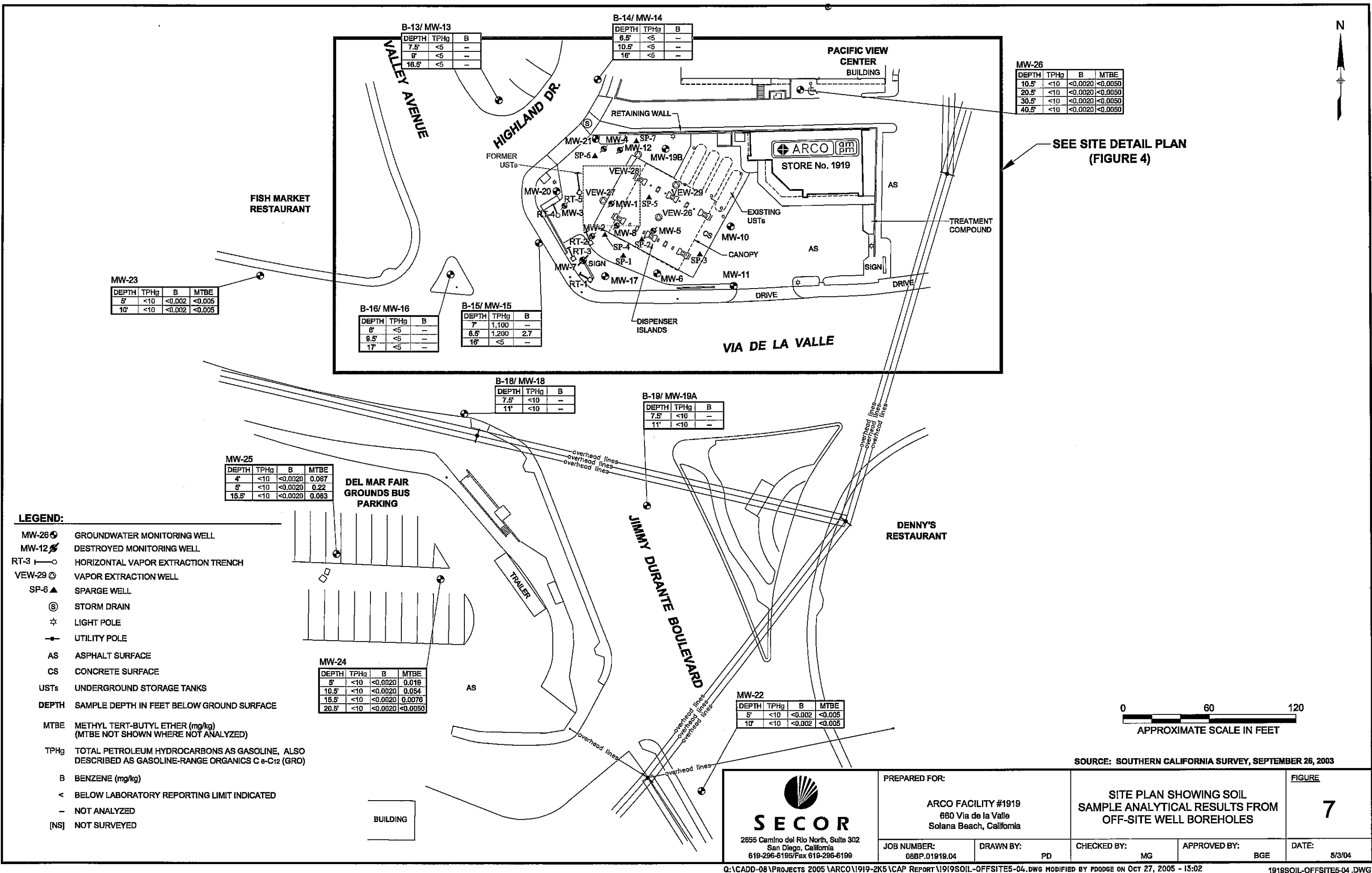


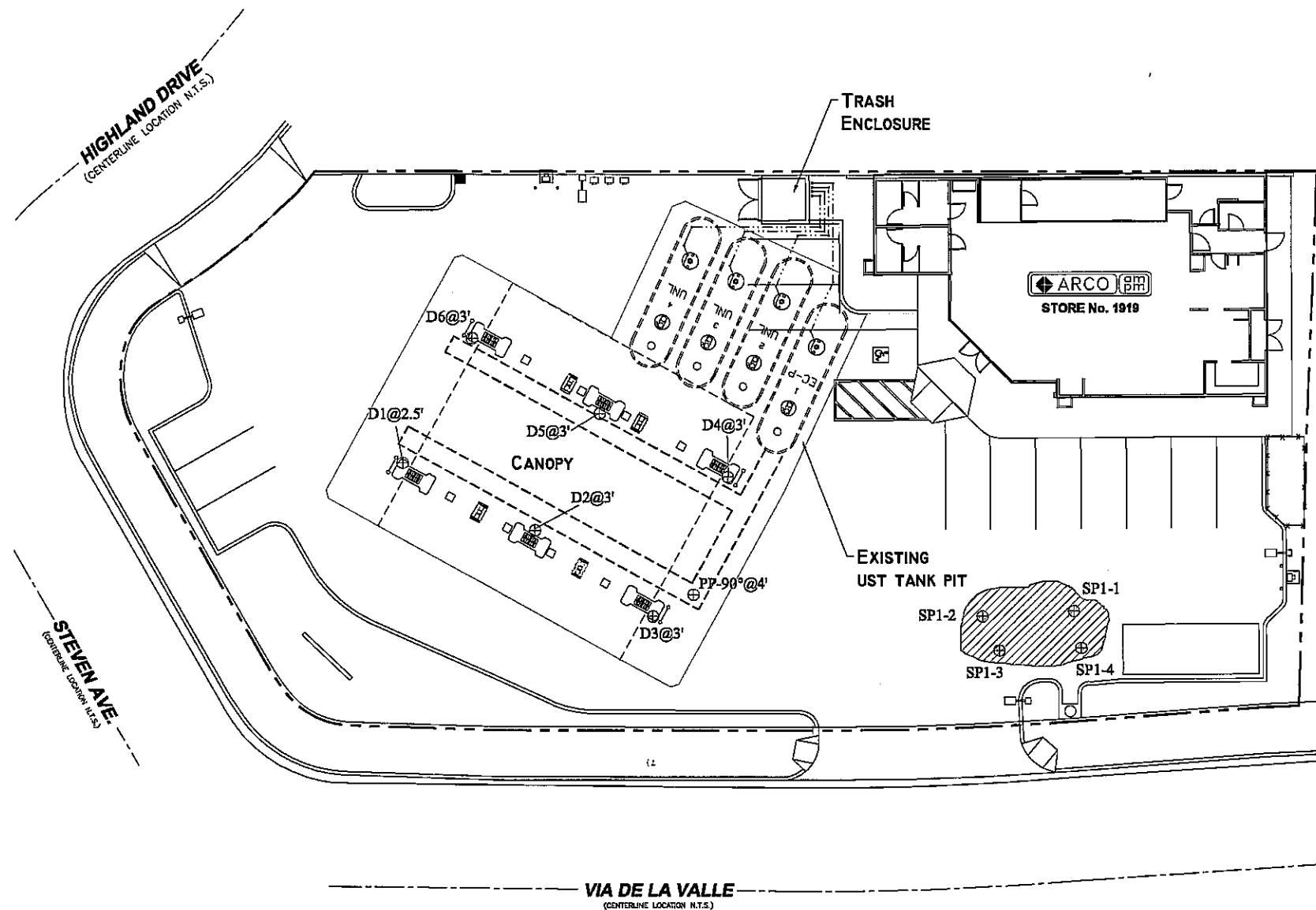
- LEGEND:**
- MW-26 GROUNDWATER MONITORING WELL
 - STORM DRAIN
 - LIGHT POLE
 - AS ASPHALT SURFACE
 - CS CONCRETE SURFACE
 - USTs UNDERGROUND STORAGE TANKS
 - (4.07) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
 - ? --- 4.50 --- ESTIMATED GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MSL. DASHED WHERE INFERRED. QUERIED WHERE UNKNOWN.
 - I=0.005 APPROXIMATE DIRECTION OF GROUNDWATER FLOW AND HYDRAULIC GRADIENT (I)
 - UST UNDERGROUND STORAGE TANK
 - [NM] GROUNDWATER ELEVATION NOT MEASURED- INACCESSIBLE
 - * GROUNDWATER ELEVATION WAS NOT USED TO CREATE CONTOUR MAP




REFERENCE:
SOUTHERN CALIFORNIA SURVEY, REPORT DATED SEPTEMBER 26, 2003

 SECOR 2655 CAMINO DEL RIO NORTH, SUITE 302 SAN DIEGO, CALIFORNIA PHONE: (619) 296-6195/296-6198 (FAX)	FOR: ARCO FACILITY #1919 660 VIA DE LA VALLE SOLANA BEACH, CALIFORNIA		GROUNDWATER ELEVATION CONTOUR MAP, SEPTEMBER 12, 2005		FIGURE: 6
	JOB NUMBER: 08BP.U1919.05	DRAWN BY: PD	CHECKED BY: WW	APPROVED BY: BGE	DATE: 10/12/05




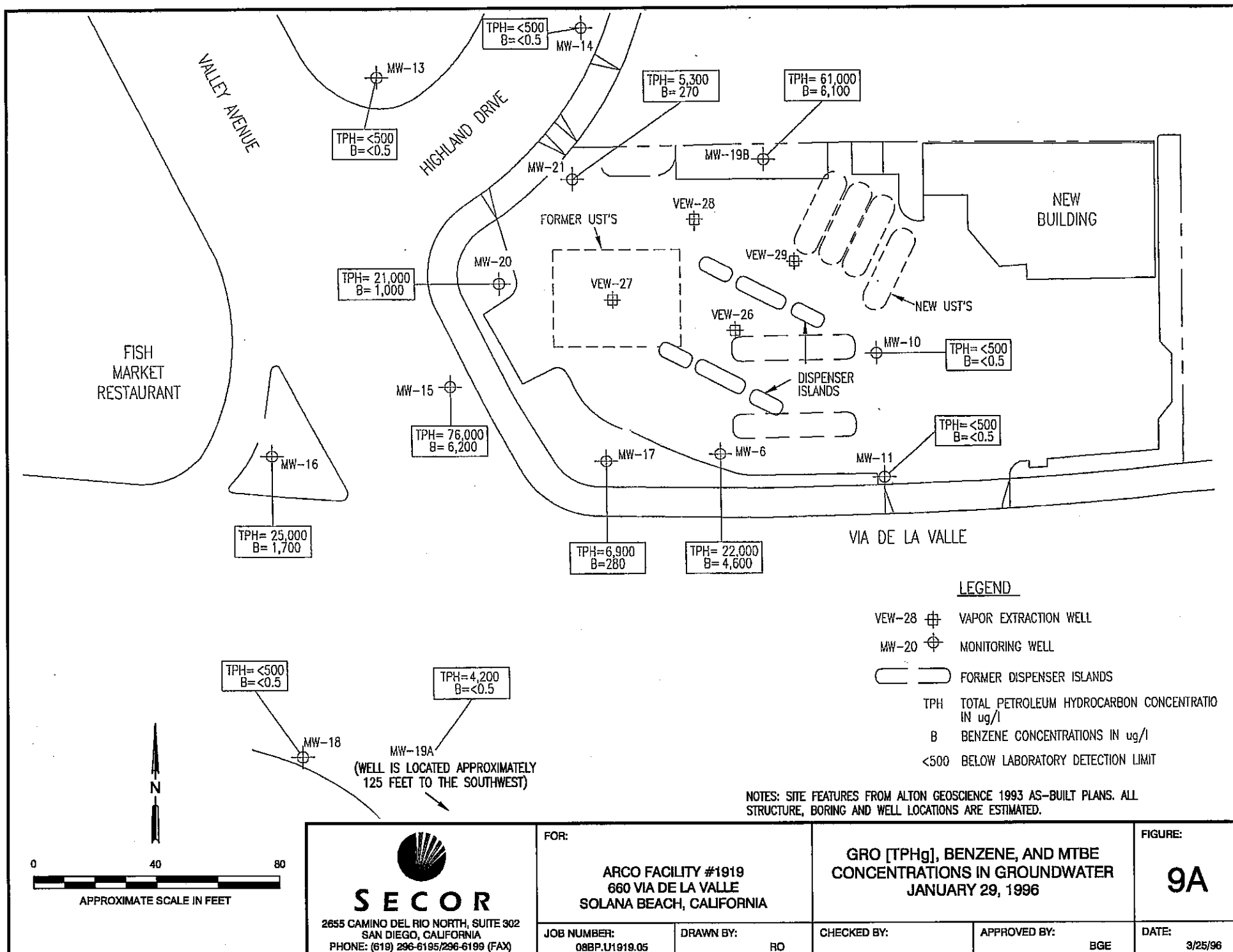


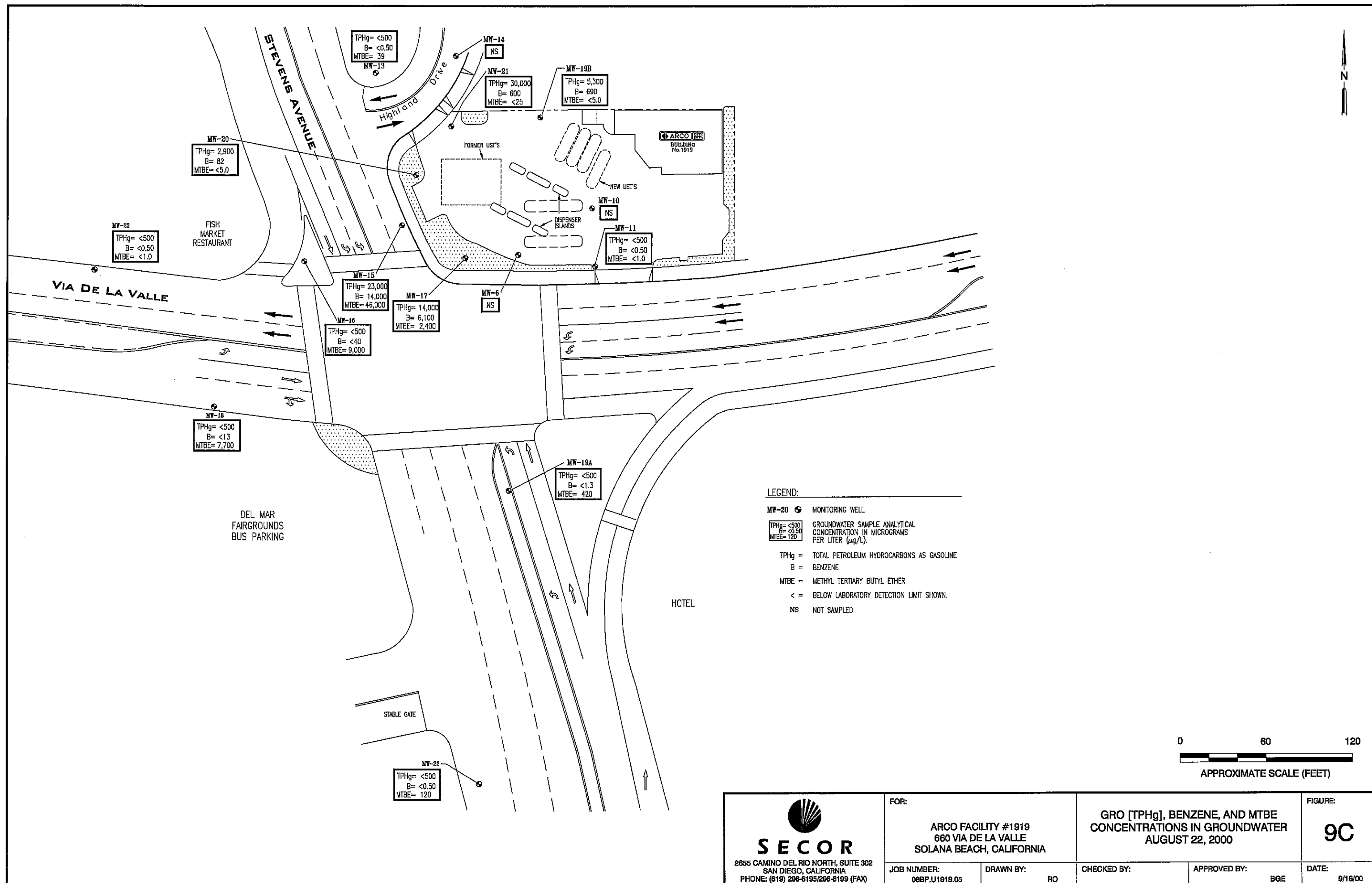
LEGEND:


- D6@3' ⊕ **DISPENSER SOIL SAMPLE LOCATION**
- PP-90°@4' ⊕ **PRODUCT LINE SOIL SAMPLE LOCATION**
- SP-1 ⊕ **SOIL STOCKPILE SAMPLE LOCATION**
-  **SOIL STOCKPILE LOCATION**
- **LIMITS OF EXCAVATION**

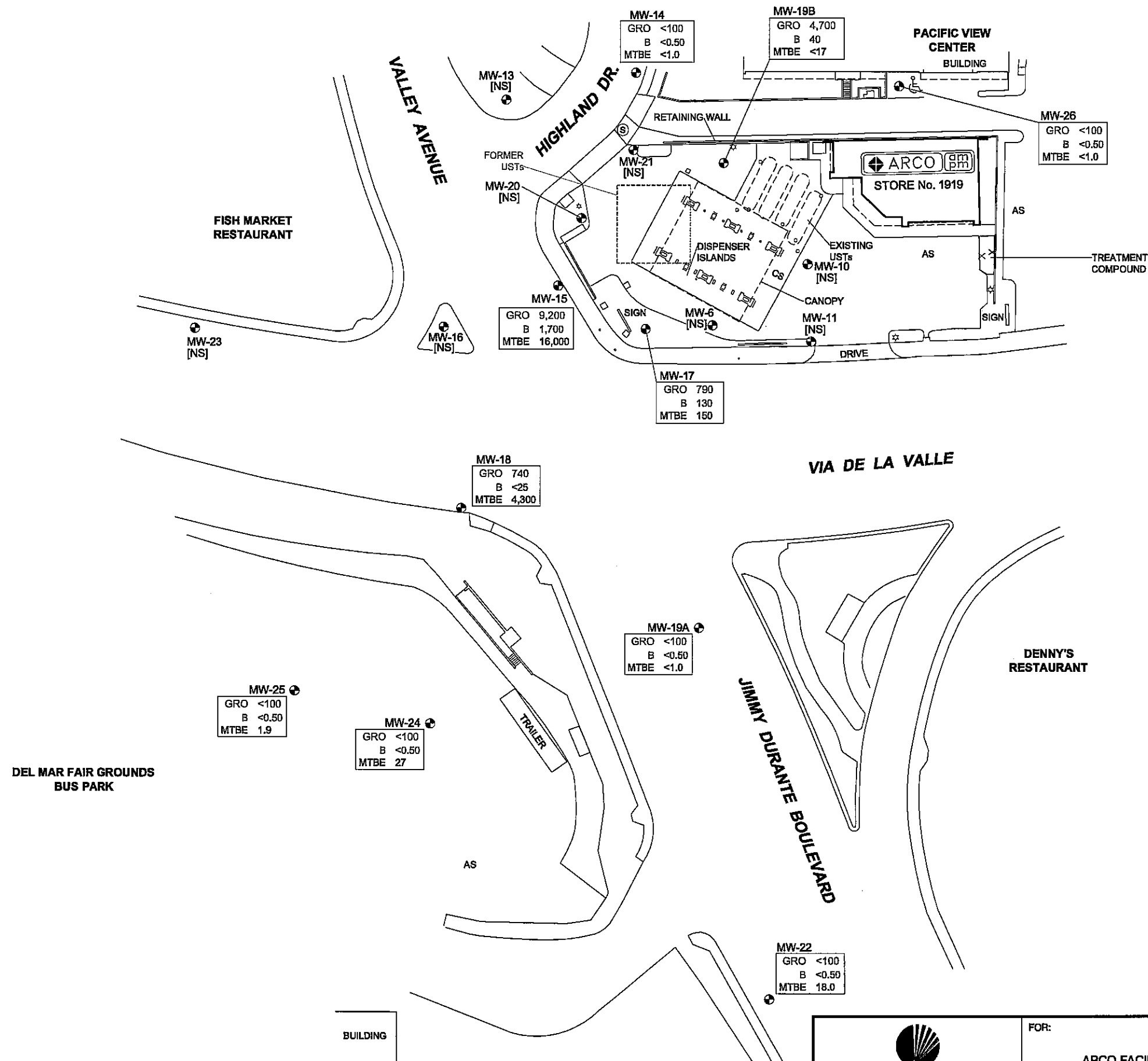
0 30 60
APPROXIMATE SCALE IN FEET

 SECOR 2655 Camino del Rio North, Suite 302 San Diego, California 619-296-6195/Fax 619-296-6199	PREPARED FOR: ARCO FACILITY #1919 660 Via de la Valle Solana Beach, California		SITE PLAN WITH FUEL DISPENSER SAMPLE LOCATIONS		FIGURE 8
	JOB NUMBER: 08BP.01919.04	DRAWN BY: PD	CHECKED BY:	APPROVED BY: BGE	DATE: 9/16/04





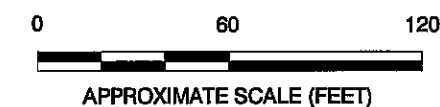
 SECOR 2655 CAMINO DEL RIO NORTH, SUITE 302 SAN DIEGO, CALIFORNIA PHONE: (619) 296-6195/296-6199 (FAX)	FOR: ARCO FACILITY #1919 660 VIA DE LA VALLE SOLANA BEACH, CALIFORNIA		GRO [TPHg], BENZENE, AND MTBE CONCENTRATIONS IN GROUNDWATER AUGUST 22, 2000		FIGURE: 9C
	JOB NUMBER: 08BP.U1919.05	DRAWN BY: RO	CHECKED BY:	APPROVED BY: BGE	DATE: 9/16/00



LEGEND:

- MW-26 GROUNDWATER MONITORING WELL
- STORM DRAIN
- LIGHT POLE
- AS ASPHALT SURFACE
- CS CONCRETE SURFACE
- USTs UNDERGROUND STORAGE TANKS
- | |
|-----------|
| GRO <100 |
| B <0.50 |
| MTBE <1.0 |

 NO PURGE AND PURGE GROUNDWATER SAMPLE ANALYTICAL CONCENTRATION IN MICROGRAMS PER LITER (μg/L), RESPECTIVELY
- GRO GASOLINE-RANGE ORGANICS C6-C12
- B BENZENE
- MTBE METHYL TERT-BUTYL ETHER
- < BELOW LABORATORY REPORTING LIMIT SHOWN
- NS NOT SAMPLED

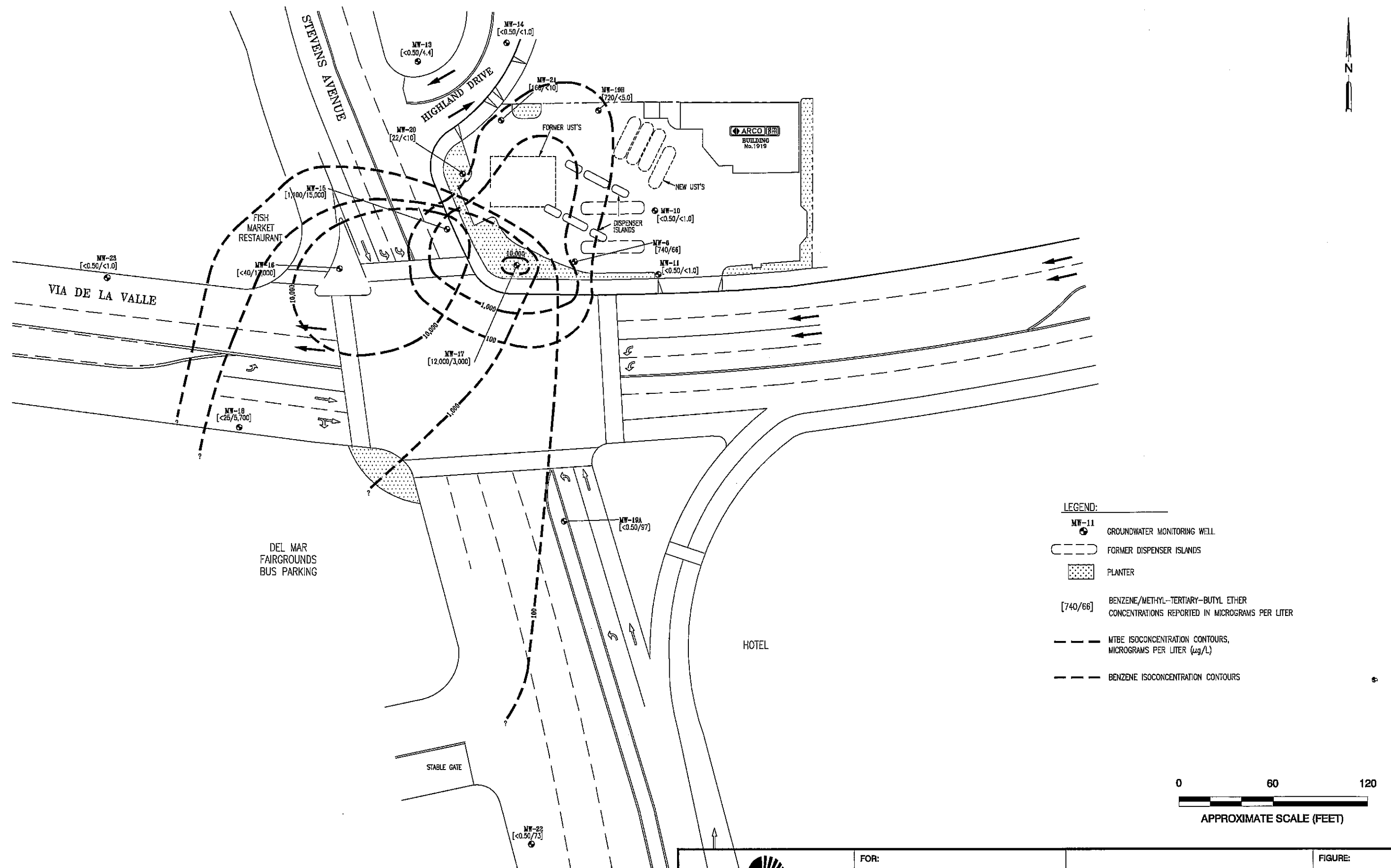



REFERENCE:
SOUTHERN CALIFORNIA SURVEY, REPORT DATED SEPTEMBER 26, 2003

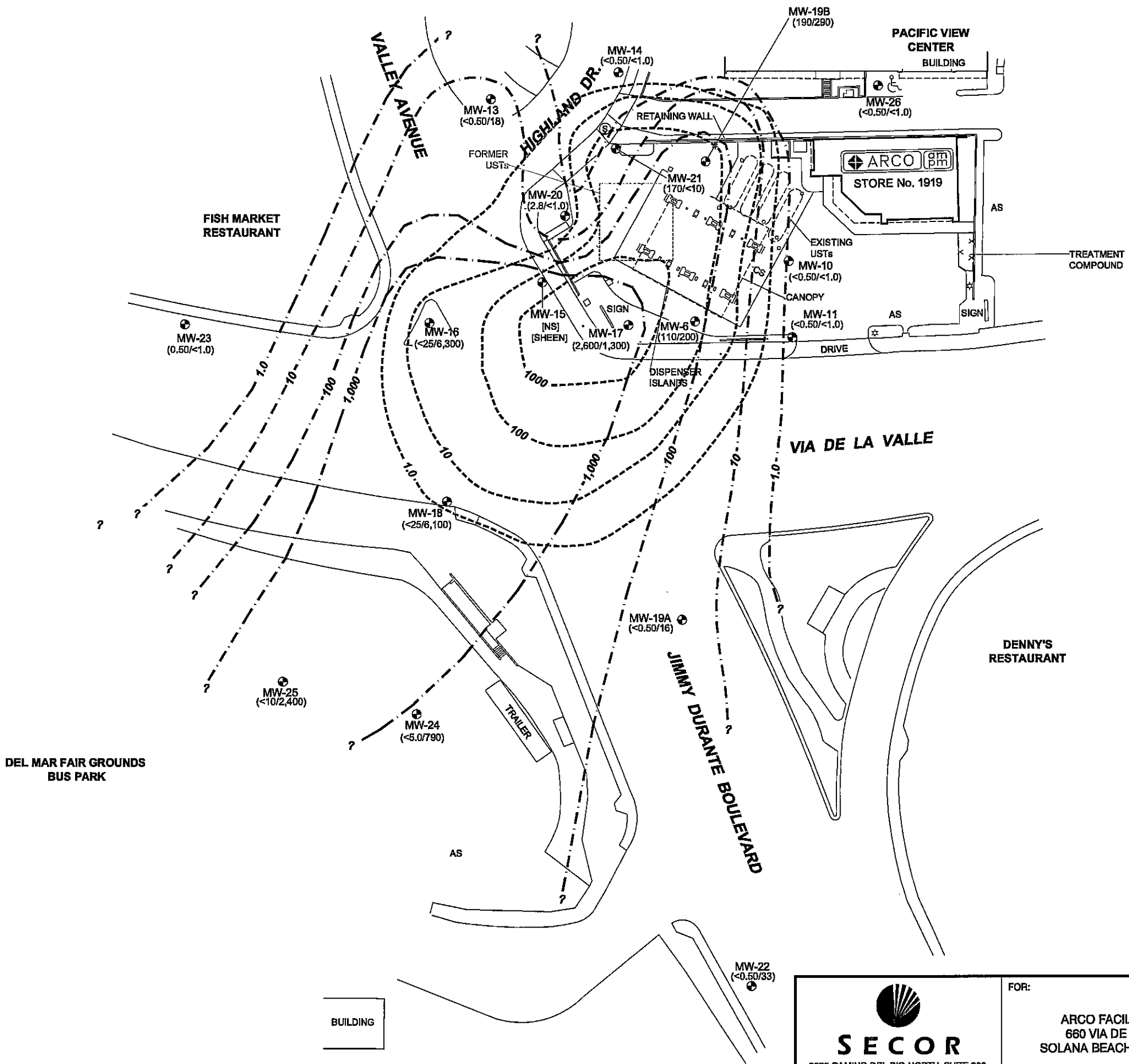
 SECOR 2655 CAMINO DEL RIO NORTH, SUITE 302 SAN DIEGO, CALIFORNIA PHONE: (619) 296-6195/296-6199 (FAX)	FOR: ARCO FACILITY #1919 660 VIA DE LA VALLE SOLANA BEACH, CALIFORNIA		GRO, BENZENE, AND MTBE CONCENTRATIONS IN GROUNDWATER SEPTEMBER 12 AND 13, 2005		FIGURE: 9D
	JOB NUMBER: 08BP.U1919.05	DRAWN BY: PD	CHECKED BY:	APPROVED BY: BGE	DATE: 10/12/05

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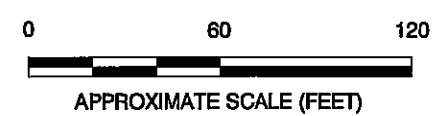
1919CON9-05




 SECOR 2655 CAMINO DEL RIO NORTH, SUITE 302 SAN DIEGO, CALIFORNIA PHONE: (619) 296-6195/296-6199 (FAX)	FOR: ARCO FACILITY #1919 660 VIA DE LA VALLE SOLANA BEACH, CALIFORNIA JOB NUMBER: 08BP.U1919.05	DRAWN BY: RO CHECKED BY: BGE APPROVED BY: BGE	FIGURE: 10A DATE: 4/30/01
--	--	--	---

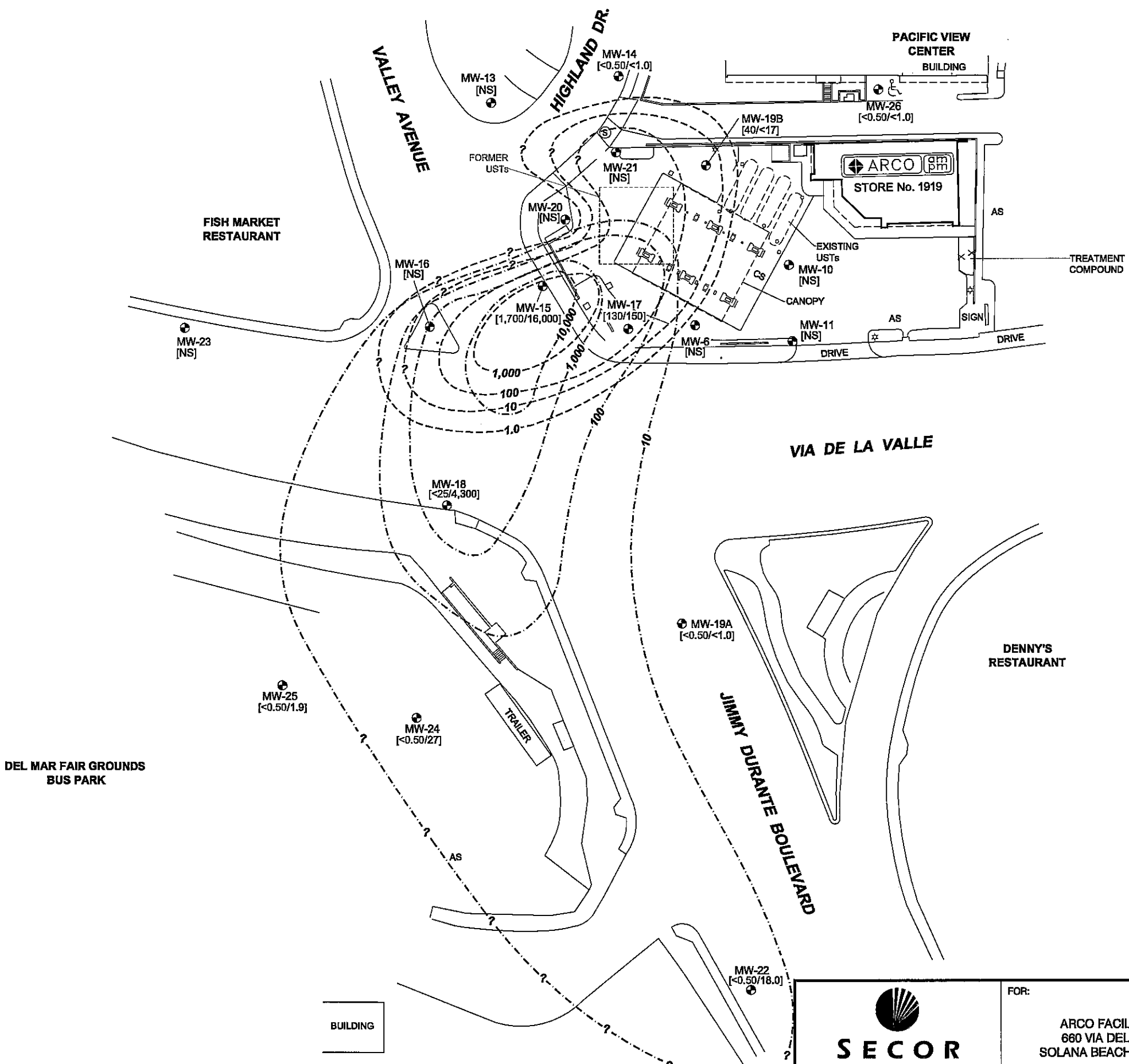


- LEGEND:**
- MW-26 GROUNDWATER MONITORING WELL
 - STORM DRAIN
 - LIGHT POLE
 - AS ASPHALT SURFACE
 - CS CONCRETE SURFACE
 - USTs UNDERGROUND STORAGE TANKS
 - ($<0.50/<1.0$) BENZENE AND METHYL-TERT-BUTYL ETHER (MTBE) CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (ug/L). HIGHEST SAMPLE RESULT BETWEEN NO PURGE AND PURGE SAMPLES USED IN CONTOURS
 - 100 — BENZENE ISOCONCENTRATION CONTOURS IN ug/L
 - 100 — BENZENE ISOCONCENTRATION CONTOURS IN ug/L
 - $<=$ BELOW LABORATORY REPORTING LIMIT SHOWN
 - [NS] NOT SAMPLED

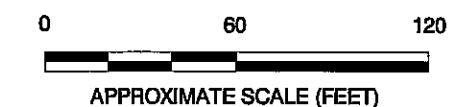


SOURCE: SOUTHERN CALIFORNIA SURVEY, SEPTEMBER 26, 2003


 SECOR 2655 CAMINO DEL RIO NORTH, SUITE 302 SAN DIEGO, CALIFORNIA PHONE: (619) 296-6195/296-6199 (FAX)		FOR: ARCO FACILITY #1919 660 VIA DE LA VALLE SOLANA BEACH, CALIFORNIA		BENZENE AND MTBE ISOCONCENTRATION MAP NOVEMBER 21, 2003		FIGURE: 10B
JOB NUMBER: 08BP.U1919.03	DRAWN BY: DW	CHECKED BY:	APPROVED BY: BGE	DATE: 1/19/04		



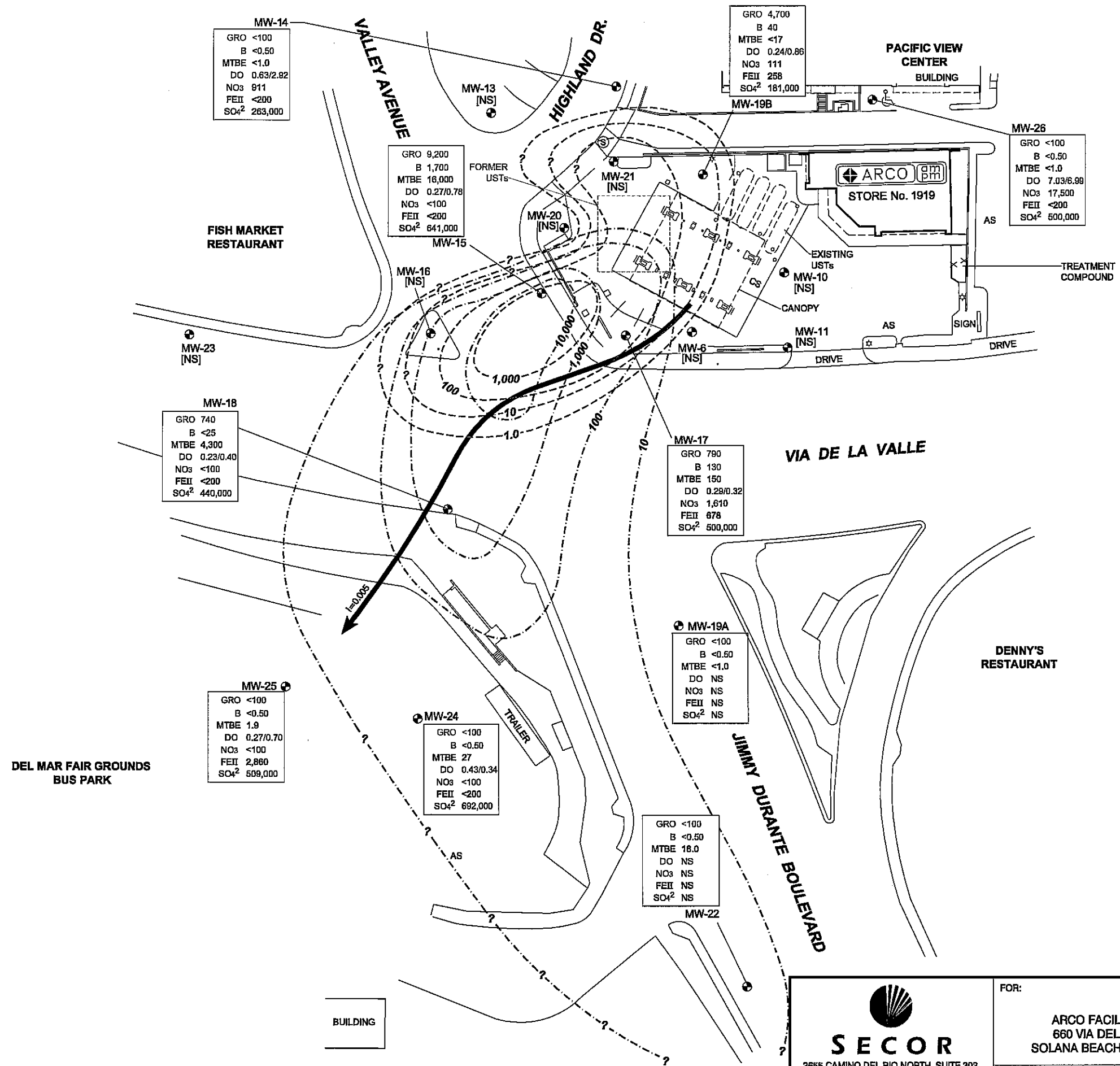
- LEGEND:**
- MW-26 GROUNDWATER MONITORING WELL
 - STORM DRAIN
 - LIGHT POLE
 - AS ASPHALT SURFACE
 - CS CONCRETE SURFACE
 - USTs UNDERGROUND STORAGE TANKS
 - [<0.50/<1.0] BENZENE AND MTBE CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L)
 - ESTIMATED BENZENE ISOCONCENTRATION CONTOUR IN µg/L, QUERIED WHERE UNKNOWN
 - ESTIMATED MTBE ISOCONCENTRATION CONTOUR IN µg/L, QUERIED WHERE UNKNOWN
 - MTBE METHYL TERT-BUTYL ETHER
 - < BELOW LABORATORY REPORTING LIMIT
 - NS NOT SAMPLED



REFERENCE:
SOUTHERN CALIFORNIA SURVEY, REPORT DATED SEPTEMBER 26, 2003

 SECOR 2655 CAMINO DEL RIO NORTH, SUITE 302 SAN DIEGO, CALIFORNIA PHONE: (619) 296-6195/296-6199 (FAX)	FOR: ARCO FACILITY #1919 660 VIA DEL LA VALLE SOLANA BEACH, CALIFORNIA		BENZENE AND MTBE ISOCONCENTRATION MAP SEPTEMBER 12 AND 13, 2005		FIGURE: 10C
	JOB NUMBER: 08BP.U1919.05	DRAWN BY: PD	CHECKED BY: WW	APPROVED BY: BGE	DATE: 10/12/05

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- LEGEND:**
- MW-26 GROUNDWATER MONITORING WELL
 - STORM DRAIN
 - LIGHT POLE
 - AS ASPHALT SURFACE
 - CS CONCRETE SURFACE
 - USTs UNDERGROUND STORAGE TANKS
 - ESTIMATED BENZENE ISOCONCENTRATION CONTOUR IN $\mu\text{g/L}$, QUERIED WHERE UNKNOWN
 - ESTIMATED MTBE ISOCONCENTRATION CONTOUR IN $\mu\text{g/L}$, QUERIED WHERE UNKNOWN
 - GRO GASOLINE-RANGE ORGANICS C6-C12 CONCENTRATIONS IN MICROGRAMS PER LITER ($\mu\text{g/L}$)
 - B BENZENE CONCENTRATIONS IN $\mu\text{g/L}$
 - MTBE METHYL TERT-BUTYL ETHER CONCENTRATIONS IN $\mu\text{g/L}$
 - DO DISSOLVED OXYGEN CONCENTRATIONS IN MILLIGRAMS PER LITER (mg/L) (NO PURGE/PURGE SAMPLE)
 - NO₃ NITRATE CONCENTRATIONS IN $\mu\text{g/L}$
 - FEII FERROUS IRON CONCENTRATIONS IN $\mu\text{g/L}$
 - SO₄²⁻ SULFATE CONCENTRATIONS IN $\mu\text{g/L}$
 - < BELOW LABORATORY REPORTING LIMIT SHOWN
 - NS NOT SAMPLED
 - APPROXIMATE DIRECTION OF GROUNDWATER FLOW AND HYDRAULIC GRADIENT (I)

REFERENCE:
SOUTHERN CALIFORNIA SURVEY, REPORT DATED SEPTEMBER 26, 2003

 SECOR 2655 CAMINO DEL RIO NORTH, SUITE 302 SAN DIEGO, CALIFORNIA PHONE: (619) 296-6195/296-6199 (FAX)	FOR: ARCO FACILITY #1919 660 VIA DEL LA VALLE SOLANA BEACH, CALIFORNIA		BENZENE AND MTBE ISOCONCENTRATION MAP WITH INDICATORS OF NATURAL ATTENUATION SEPTEMBER 12 AND 13, 2005		FIGURE: 11
	JOB NUMBER: 08BP.U1919.05	DRAWN BY: PD	CHECKED BY: WW	APPROVED BY: BGE	DATE: 10/12/05

Figure 12A
Benzene Concentration Trend Evaluation - Well MW-16
ARCO Facility #1919

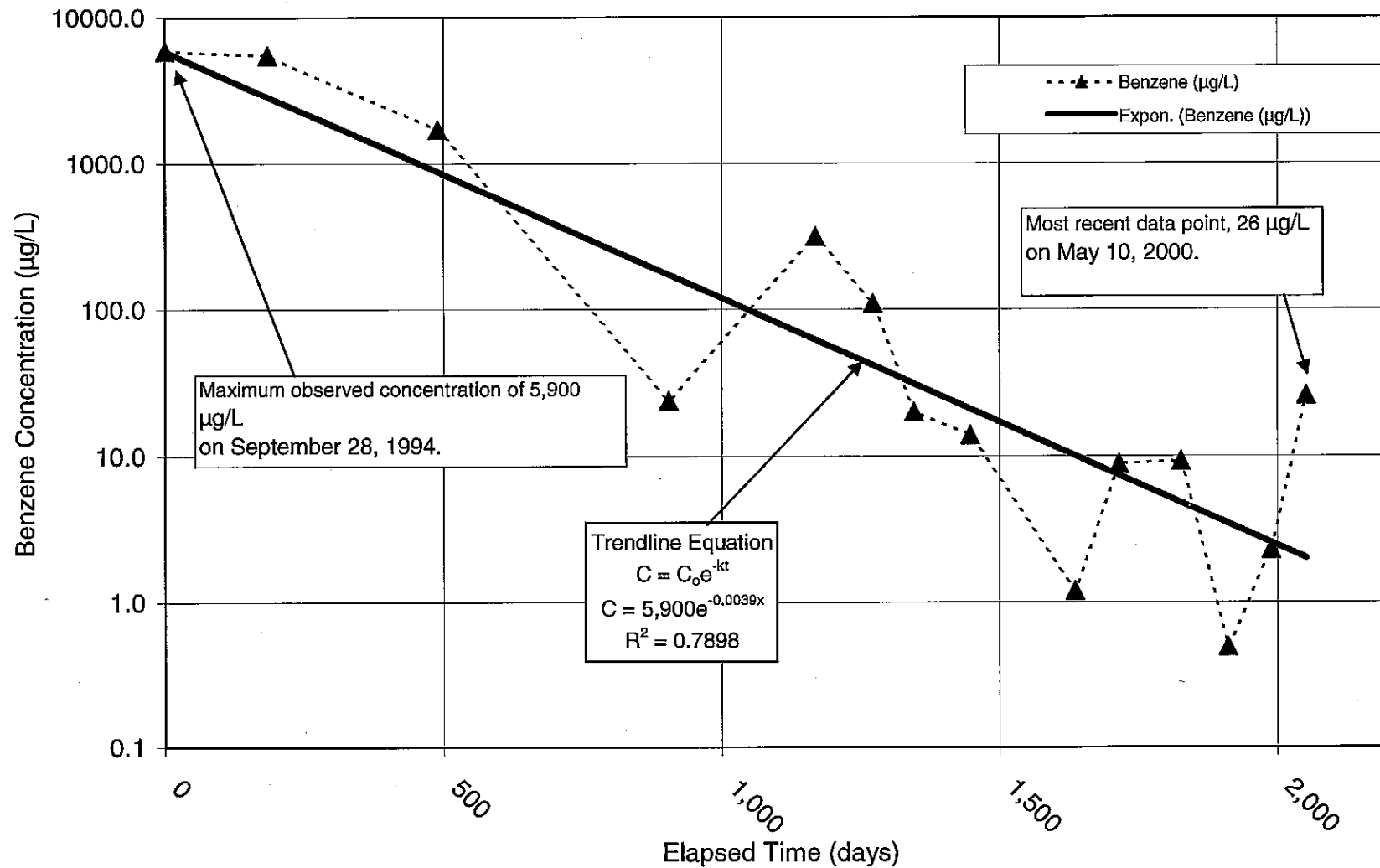


Figure 12B
MTBE Concentration Trend Evaluation - Well MW-16
ARCO Facility #1919

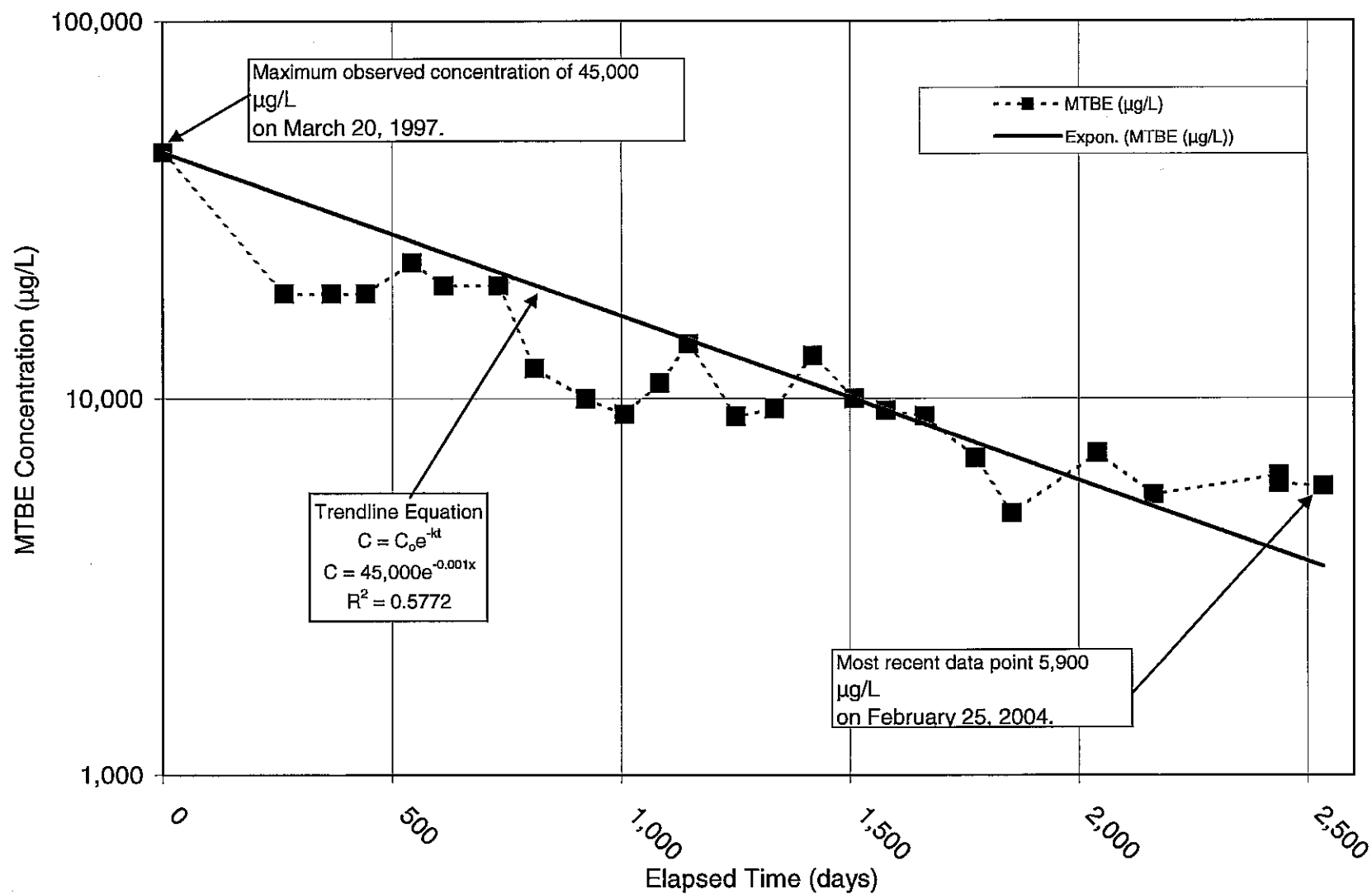
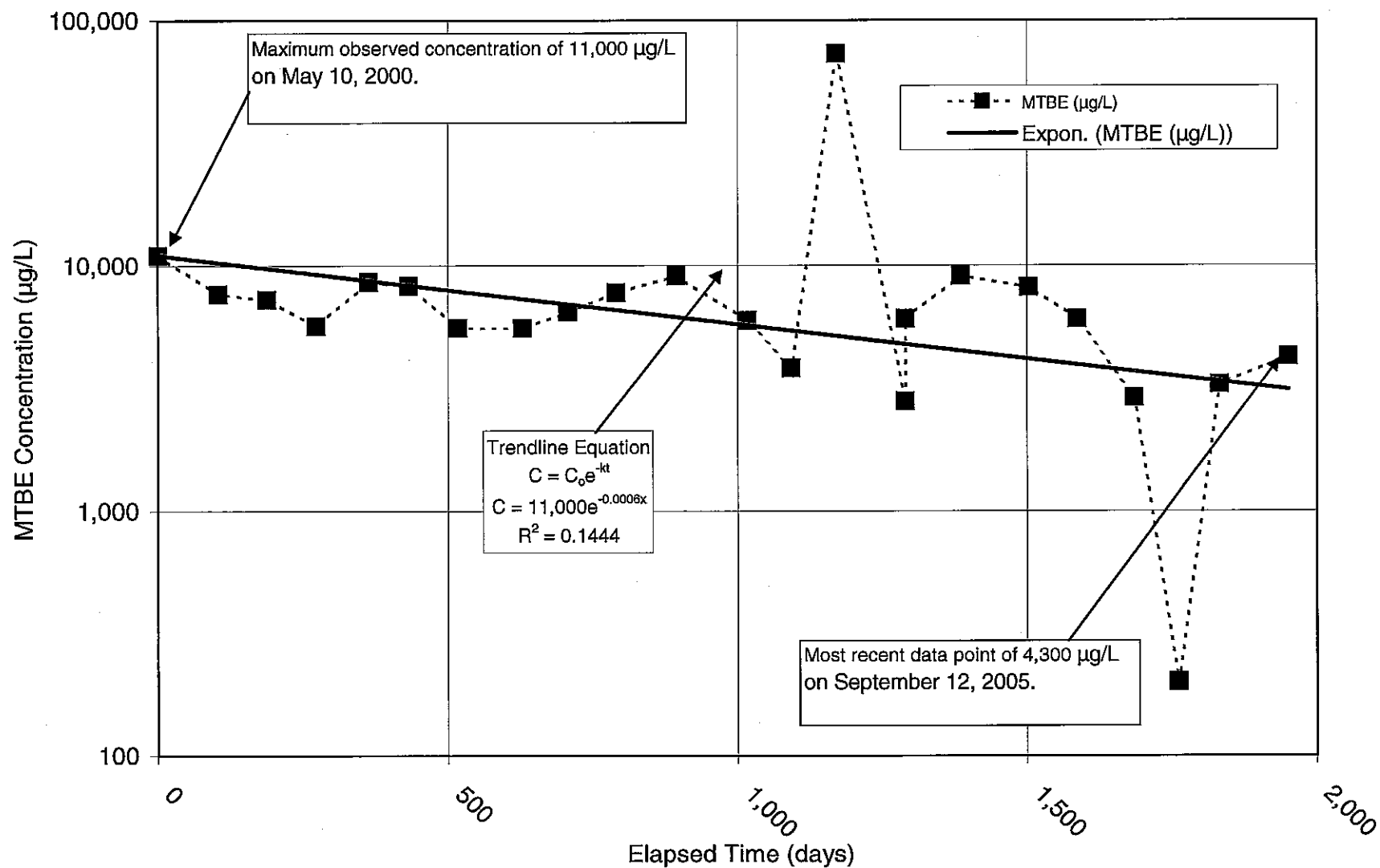


Figure 12C
MTBE Concentration Trend Evaluation - Well MW-18
ARCO Facility #1919



TABLES
CORRECTIVE ACTION PLAN
ATLANTIC RICHFIELD COMPANY
ARCO Facility #1919
660 Via de la Valle
Solana Beach, California
SAM Case #H05166-002
SECOR PROJECT NO. 08BP.01919.07
October 21, 2005

TABLE 1
SUMMARY OF BENEFICIAL GROUNDWATER AND COASTAL WATER USES
ARCO Facility #1919

San Dieguito Hydrologic Unit (HU 905.00)
Solana Beach Hydrologic Area (905.10)
Rancho Santa Fe Hydrologic Subarea (905.11)

Beneficial Use *	Groundwater	Surface Water
Municipal/Domestic Supply *	X	
Agricultural Supply *	X	
Industrial Service Supply *	X	--
Industrial Process Supply	--	
Groundwater Recharge	--	
Freshwater Replenishment	--	
Navigation		--
Contact Water Recreation (REC 1)		X
Non-contact Water Recreation (REC 2)		X
Commercial and Sport Fishing		--
Biological Habitats of Special Significance		X
Estuarine Habitat		X
Wildlife Habitat		X
Rare, Threatened, or Endangered Species		X
Marine Habitat		X
Aquaculture		--
Migration of Aquatic Organisms		X
Spawning, Reproduction, and/or Early Development		--
Warm Freshwater Habitat		--
Shellfish Harvesting		--

Notes:

* = These beneficial uses do not apply westerly of the easterly boundary of the right-of-way of Interstate Highway 5 and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area are as shown.

X = Existing Beneficial Use

+ = Existing Beneficial Use, but water quality does not meet criteria for municipal, and either agricultural, irrigation, or livestock watering.

o = Potential Beneficial Use

-- = No Existing or Potential Beneficial Use.

Source:

California State Water Resources Board and Regional Water Quality Control Board, San Diego Region "Water Quality Control Plan, San Diego Basin (9), 1994"

TABLE 2A
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919
(Results are reported in mg/kg)

Sample Location	Date Sampled	Depth (ft)	GRO	DRO	B ^{**}	T ^{**}	E ^{**}	X ^{**}	MTBE ^{**}	TAME ^{**}	DIPE ^{**}	ETBE ^{**}	TBA ^{**}	Ethanol ^{**}	Source
<i>Soil samples collected by Alton Geoscience, SECOR, and others during previous assessment.</i>															
B-1/MW-1	10/4/1990	5	<10	--	--	--	--	--	--	--	--	--	--	--	1
	10/4/1990	10	24,000	--	560	2,400	510	1,900	--	--	--	--	--	--	
B-2/MW-2	10/4/1990	5	<10	--	--	--	--	--	--	--	--	--	--	--	
	10/4/1990	10	<10	--	0.56	0.76	0.40	1.3	--	--	--	--	--	--	
B-3/MW-3	10/4/1990	5	<10	--	--	--	--	--	--	--	--	--	--	--	
	10/4/1990	10	12	--	0.96	0.32	0.28	0.06	--	--	--	--	--	--	
B-4	10/4/1990	5	<10	--	--	--	--	--	--	--	--	--	--	--	
	10/4/1990	10	13	--	0.12	0.28	0.06	0.28	--	--	--	--	--	--	
B-5/MW-4	10/4/1990	5	82	--	<0.05	0.20	0.12	0.72	--	--	--	--	--	--	
	10/4/1990	10	<10	--	--	--	--	--	--	--	--	--	--	--	
B-6/MW-5	10/5/1990	5	<10	--	--	--	--	--	--	--	--	--	--	--	
	10/5/1990	10	<10	--	0.48	0.40	<0.05	0.36	--	--	--	--	--	--	
B-7/MW-6	10/5/1990	5	<10	--	--	--	--	--	--	--	--	--	--	--	
	10/5/1990	10	<10	--	<0.05	0.16	<0.05	<0.15	--	--	--	--	--	--	
B-8/MW-7	10/5/1990	5	2,400	--	14	140	29	150	--	--	--	--	--	--	
	10/5/1990	8	47	--	--	--	--	--	--	--	--	--	--	--	
B-9/MW-8	10/5/1990	5	<10	--	--	--	--	--	--	--	--	--	--	--	
	10/5/1990	9	<10	--	1.3	1.5	0.16	1.1	--	--	--	--	--	--	
B-10/MW-10	2/12/1992	6.5	<5	--	--	--	--	--	--	--	--	--	--	--	2
	2/12/1992	8.5	<5	--	--	--	--	--	--	--	--	--	--	--	
	2/12/1992	15.5	<5	--	--	--	--	--	--	--	--	--	--	--	
B-11/MW-11	2/12/1992	7	<5	--	--	--	--	--	--	--	--	--	--	--	
	2/12/1992	9.5	<5	--	--	--	--	--	--	--	--	--	--	--	
	2/12/1992	12.5	<5	--	--	--	--	--	--	--	--	--	--	--	
B-12/MW-12	2/12/1992	6	<5	--	--	--	--	--	--	--	--	--	--	--	
	2/12/1992	9.5	<5	--	--	--	--	--	--	--	--	--	--	--	
	2/12/1992	17	<5	--	--	--	--	--	--	--	--	--	--	--	
B-13/MW-13	2/12/1992	7.5	<5	--	--	--	--	--	--	--	--	--	--	--	
	2/12/1992	9	<5	--	--	--	--	--	--	--	--	--	--	--	
	2/12/1992	16.5	<5	--	--	--	--	--	--	--	--	--	--	--	
B-14/MW-14	2/13/1992	6.5	<5	--	--	--	--	--	--	--	--	--	--	--	
	2/13/1992	10.5	<5	--	--	--	--	--	--	--	--	--	--	--	
	2/13/1992	16	<5	--	--	--	--	--	--	--	--	--	--	--	

TABLE 2A
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919
(Results are reported in mg/kg)

Sample Location	Date Sampled	Depth (ft)	GRO	DRO	B ⁺	T ⁺	E ⁺	X ⁺	MTBE ⁺	TAME ⁺	DIPE ⁺	ETBE ⁺	TBA ⁺	Ethanol ⁺	Source
B-15/MW-15	2/13/1992	7	1,100	--	--	--	--	--	--	--	--	--	--	--	2
	2/13/1992	8.5	1,200	--	2.700	21.000	8.100	50.000	--	--	--	--	--	--	
	2/13/1992	16	<5	--	--	--	--	--	--	--	--	--	--	--	
B-16/MW-16	2/13/1992	6	<5	--	--	--	--	--	--	--	--	--	--	--	3
	2/13/1992	9.5	<5	--	--	--	--	--	--	--	--	--	--	--	
B-16/MW-16	2/13/1992	17	<5	--	--	--	--	--	--	--	--	--	--	--	
B-17/MW-17	7/22/1992	4.5	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--	--	--	--	3
	7/22/1992	6	<10	--	--	--	--	--	--	--	--	--	--	--	
	7/22/1992	7.5	1,711	--	36.38	215.16	41.59	336.15	--	--	--	--	--	--	
	7/22/1992	10	<10	--	--	--	--	--	--	--	--	--	--	--	
B-18/MW-18	7/23/1992	7.5	<10	--	--	--	--	--	--	--	--	--	--	--	4
	7/23/1992	11	<10	--	--	--	--	--	--	--	--	--	--	--	
B-19/MW -19A	7/23/1992	7.5	<10	--	--	--	--	--	--	--	--	--	--	--	
	7/23/1992	10.5	<10	--	--	--	--	--	--	--	--	--	--	--	
B-20	10/6/1993	5.5	<10	--	--	--	--	--	--	--	--	--	--	--	4
	10/6/1993	7.5	421	--	17.980	32.976	9.773	47.951	--	--	--	--	--	--	
	10/6/1993	10.5	<10	--	--	--	--	--	--	--	--	--	--	--	
B-21	10/6/1993	6.5	<10	--	--	--	--	--	--	--	--	--	--	--	4
	10/6/1993	8	<10	--	--	--	--	--	--	--	--	--	--	--	
	10/6/1993	10	68	--	<0.050	0.303	0.651	0.885	--	--	--	--	--	--	
DUP	10/6/1993	10	11	--	<0.050	<0.050	<0.050	0.412	--	--	--	--	--	--	4
B-22	10/6/1993	7.5	<10	--	--	--	--	--	--	--	--	--	--	--	
	10/6/1993	10.5	20,116	--	61.06	315.10	230.51	880.02	--	--	--	--	--	--	
	10/6/1993	13	<10	--	--	--	--	--	--	--	--	--	--	--	
DUP	10/6/1993	13	<10	--	--	--	--	--	--	--	--	--	--	--	4
B-23	10/6/1993	8.5	<10	--	--	--	--	--	--	--	--	--	--	--	
	10/6/1993	10	<10	--	--	--	--	--	--	--	--	--	--	--	
	10/6/1993	11	<10	--	--	--	--	--	--	--	--	--	--	--	
B-24	10/6/1993	8.5	<10	--	--	--	--	--	--	--	--	--	--	--	4
	10/6/1993	10.5	11,860	--	36.68	149.85	125.7	514.55	--	--	--	--	--	--	
	10/6/1993	12.5	20	--	--	--	--	--	--	--	--	--	--	--	
B-25	10/6/1993	7.5	<10	--	--	--	--	--	--	--	--	--	--	--	4
	10/6/1993	10.5	<10	--	--	--	--	--	--	--	--	--	--	--	
	10/6/1993	12	<10	--	--	--	--	--	--	--	--	--	--	--	

TABLE 2A
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919
(Results are reported in mg/kg)

Sample Location	Date Sampled	Depth (ft)	GRO	DRO	B**	T**	E**	X**	MTBE**	TAME**	DIPE**	ETBE**	TBA**	Ethanol**	Source
B-26	10/6/1993	6	<10	--	--	--	--	--	--	--	--	--	--	--	4
	10/6/1993	7.5	13,531	--	179.67	403.83	172.13	643.97	--	--	--	--	--	--	
	10/6/1993	10.5	14	--	--	--	--	--	--	--	--	--	--	--	
B-27	10/6/1993	6	182	--	--	--	--	--	--	--	--	--	--	--	
	10/6/1993	7.5	6,852	--	17.544	39.657	45.493	153.441	--	--	--	--	--	--	
	10/6/1993	10.5	126	--	--	--	--	--	--	--	--	--	--	--	
HA-7	8/14/1992	1.8	10,560	--	--	--	--	--	--	--	--	--	--	--	5
	8/14/1992	4.8	7,894	--	--	--	--	--	--	--	--	--	--	--	
	8/14/1992	8.8	139,439	--	694.2	2,741.80	1,393.0	4,900.80	--	--	--	--	--	--	
	8/14/1992	8.8	76,887	--	--	--	--	--	--	--	--	--	--	--	
MW-19/MW-19B	4/13/1994	7.5	<10	--	--	--	--	--	--	--	--	--	--	--	6
DUP	4/13/1994	10	<10	--	--	--	--	--	--	--	--	--	--	--	
	4/13/1994	11.5	5,763	--	--	--	--	--	--	--	--	--	--	--	
	4/13/1994	12.5	9,379	--	<5.0	<5.0	104.0	428.5	--	--	--	--	--	--	
	4/13/1994	12.5	9,687	--	--	--	--	--	--	--	--	--	--	--	
	4/13/1994	15.5	<10	--	--	--	--	--	--	--	--	--	--	--	
MW-20	4/13/1994	6	<10	--	--	--	--	--	--	--	--	--	--	--	1
	4/13/1994	7.5	<10	--	--	--	--	--	--	--	--	--	--	--	
	4/13/1994	9	2,593	--	--	--	--	--	--	--	--	--	--	--	
	4/13/1994	15	<10	--	--	--	--	--	--	--	--	--	--	--	
MW-21	4/13/1994	7.5	<10	--	--	--	--	--	--	--	--	--	--	--	
	4/13/1994	8.5	13,460	--	28.2	182.1	116.9	783.6	--	--	--	--	--	--	
	4/13/1994	12	29	--	--	--	--	--	--	--	--	--	--	--	
MW-22	7/11/2000	5	<10	--	<0.002	<0.002	<0.002	<0.004	<0.005	--	--	--	--	--	
	7/11/2000	10	<10	--	<0.002	<0.002	<0.002	<0.004	<0.005	--	--	--	--	--	
MW-23	7/11/2000	5	<10	--	<0.002	<0.002	<0.002	<0.004	<0.005	--	--	--	--	--	
	7/11/2000	10	<10	--	<0.002	<0.002	<0.002	<0.004	<0.005	--	--	--	--	--	
PL-1	9/26/1990	5	3,200	--	--	--	--	--	--	--	--	--	--	--	
	9/26/1990	9	21,000	--	21	500	220	1,200	--	--	--	--	--	--	
PL-2	9/26/1990	5	<10	--	--	--	--	--	--	--	--	--	--	--	
	9/26/1990	9	<10	--	0.06	0.18	<0.05	<0.15	--	--	--	--	--	--	
PL-3	9/26/1990	5	<10	--	--	--	--	--	--	--	--	--	--	--	
	9/26/1990	9	7,600	--	0.24	10	7.4	45	--	--	--	--	--	--	
PL-4	9/26/1990	5	<10	--	--	--	--	--	--	--	--	--	--	--	
	9/26/1990	9	7,800	--	2.0	96	81	370	--	--	--	--	--	--	

TABLE 2A
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919
(Results are reported in mg/kg)

Sample Location	Date Sampled	Depth (ft)	GRO	DRO	B**	T**	E**	X**	MTBE**	TAME**	DIPE**	ETBE**	TBA**	Ethanol**	Source
PL-5	9/26/1990	5	<10	--	--	--	--	--	--	--	--	--	--	--	1
	9/26/1990	9	240	--	0.07	0.15	<0.05	<0.15	--	--	--	--	--	--	
PL-6	9/26/1990	5	800	--	--	--	--	--	--	--	--	--	--	--	
	9/26/1990	9	150	--	<0.05	3.3	6.8	47	--	--	--	--	--	--	
PLA-1	10/20/1993	3	231	--	--	--	--	--	--	--	--	--	--	--	
PLA-2	10/20/1993	3	3,459	--	--	--	--	--	--	--	--	--	--	--	
PLA-3	10/20/1993	3	<10	--	--	--	--	--	--	--	--	--	--	--	
PLA-4	10/20/1993	3	6,749	--	39.28	159.62	55.64	313.88	--	--	--	--	--	--	
PLA-5	10/20/1993	3	3,250	--	--	--	--	--	--	--	--	--	--	--	
PLA-6	10/20/1993	3	72	--	--	--	--	--	--	--	--	--	--	--	
PLA-7	10/20/1993	3	<10	--	--	--	--	--	--	--	--	--	--	--	
PLA-8	10/20/1993	3	533	--	--	--	--	--	--	--	--	--	--	--	
PLA-9	10/20/1993	3	583	--	--	--	--	--	--	--	--	--	--	--	
PLA-10	10/20/1993	3	<10	--	--	--	--	--	--	--	--	--	--	--	
PLA-11	10/20/1993	3	196	--	--	--	--	--	--	--	--	--	--	--	
PLA-12	10/20/1993	3	3,842	--	--	--	--	--	--	--	--	--	--	--	
S-1	10/20/1993	9.5	404	--	--	--	--	--	--	--	--	--	--	--	6
SR-1	1/24/1994	5	<10	--	--	--	--	--	--	--	--	--	--	--	
TR-1	3/1/1994	3	<10	--	--	--	--	--	--	--	--	--	--	--	
TR-2	3/1/1994	3	<10	--	--	--	--	--	--	--	--	--	--	--	
TR-3	3/1/1994	3	<10	--	--	--	--	--	--	--	--	--	--	--	
VEW 26	4/13/1994	7	<10	--	--	--	--	--	--	--	--	--	--	--	
	4/13/1994	10	7,503	--	83.70	475.70	169.90	979.50	--	--	--	--	--	--	
DUP	4/13/1994	10	7,317	--	93.80	530.70	190.10	1,113.00	--	--	--	--	--	--	
	4/13/1994	1.4	5,732	--	--	--	--	--	--	--	--	--	--	--	
VEW 27	4/13/1994	5	<10	--	--	--	--	--	--	--	--	--	--	--	
	4/13/1994	7.5	283	--	--	--	--	--	--	--	--	--	--	--	
VEW 28	4/13/1994	8	<10	--	--	--	--	--	--	--	--	--	--	--	
	4/13/1994	9.5	233	--	--	--	--	--	--	--	--	--	--	--	
	4/13/1994	10.5	1,381	--	--	--	--	--	--	--	--	--	--	--	
	4/13/1994	11	66,463	--	304	1,658	642	3,850	--	--	--	--	--	--	

TABLE 2A
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919
(Results are reported in mg/kg)

Sample Location	Date Sampled	Depth (ft)	GRO	DRO	B"	T"	E"	X"	MTBE"	TAME"	DIPE"	ETBE"	TBA"	Ethanol"	Source
Soil samples collected by SECOR during air sparge well installation.															
SP1-15'	3/28/1995	15	19	--	1.8	0.46	0.33	1.3	--	--	--	--	--	--	7
SP2-5'	3/29/1995	5	38	--	--	--	--	--	--	--	--	--	--	--	
SP2-10'	3/29/1995	10	120	--	2.0	3.2	1.7	9.1	--	--	--	--	--	--	
SP2-15'	3/29/1995	15	14	--	--	--	--	--	--	--	--	--	--	--	
SP3-10'	3/28/1995	10	5,700	--	12	210	96	610	--	--	--	--	--	--	
SP3-15'	3/28/1995	15	12	--	--	--	--	--	--	--	--	--	--	--	
SP4-15'	3/28/1995	15	16	--	1.3	0.84	0.29	1.2	--	--	--	--	--	--	
SP5-15'	3/29/1995	15	<10	--	0.17	1.1	0.23	1.4	--	--	--	--	--	--	
SP6-5'	3/28/1995	5	<10	--	--	--	--	--	--	--	--	--	--	--	
SP6-10'	3/28/1995	10	19	--	0.29	1.7	0.57	3.0	--	--	--	--	--	--	
SP7-10'	3/28/1995	10	3,300	--	<5	<5	24	25	--	--	--	--	--	--	
Soil Samples collected by SECOR during pipeline and dispenser upgrade activities.															
D1@2 1/2'	1/9/2003	2.5	<10	11	--	--	--	--	--	--	--	--	--	--	8
D2@3'	1/9/2003	2	<10	34	<0.0020	<0.0020	<0.0020	<0.0040	<0.0050	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
D3@3'	1/9/2003	3	<10	8.4	--	--	--	--	--	--	--	--	--	--	
D4@3'	1/9/2003	3	<10	<5.0	--	--	--	--	--	--	--	--	--	--	
D5@3'	1/9/2003	3	<10	13	<0.0020	<0.0020	<0.0020	<0.0040	<0.0050	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
D6@3'	1/9/2003	3	<10	6.7	--	--	--	--	--	--	--	--	--	--	
PP-90°@4'	1/9/2003	4	<10	10	--	--	--	--	--	--	--	--	--	--	
Stockpile soil samples collected by SECOR during pipeline and dispenser upgrade activities.															
SP1-1	1/20/2003	N/A	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	<0.0050	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
SP1-2	1/20/2003	N/A	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	<0.0050	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
SP1-3	1/20/2003	N/A	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	<0.0050	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
SP1-4	1/20/2003	N/A	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	<0.0050	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
Soil Samples collected by SECOR during the most recent off-site assessment activities.															
MW-24	10/1/2003	5	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	0.019	<0.0050	<0.0050	<0.0050	<0.10	<0.30	9
	10/1/2003	10.5	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	0.054	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
	10/1/2003	15.5	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	0.0076	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
	10/1/2003	20.5	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	<0.0050	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
MW-25	10/1/2003	4	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	0.067	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
	10/1/2003	5	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	0.22	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
	10/1/2003	15.5	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	0.083	<0.0050	<0.0050	<0.0050	<0.10	<0.30	

TABLE 2A
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919
(Results are reported in mg/kg)

Sample Location	Date Sampled	Depth (ft)	GRO	DRO	B ^{**}	T ^{**}	E ^{**}	X ^{**}	MTBE ^{**}	TAME ^{**}	DIPE ^{**}	ETBE ^{**}	TBA ^{**}	Ethanol ^{**}	Source
MW-26	10/2/2003	10.5	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	<0.0050	<0.0050	<0.0050	<0.0050	<0.10	<0.30	9
	10/2/2003	20.5	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	<0.0050	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
	10/2/2003	30.5	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	<0.0050	<0.0050	<0.0050	<0.0050	<0.10	<0.30	
	10/2/2003	40.5	<10	--	<0.0020	<0.0020	<0.0020	<0.0040	<0.0050	<0.0050	<0.0050	<0.0050	<0.10	<0.30	

Notes:

TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015 Modified
 TPHd = Total petroleum hydrocarbons as diesel fuel by EPA Method 8015 Modified
 B = Benzene
 T = Toluene
 E = Ethylbenzene
 X = Total xylenes
 MTBE = Methyl tertiary butyl ether (analytical results by EPA Method 8021B, unless noted otherwise.)
 TBA = Tert-butyl alcohol (by EPA Method 8260B)
 DIPE = Di-isopropyl ether (by EPA Method 8260B)
 ETBE = Ethyl tert-butyl ether (by EPA Method 8260B)
 TAME = tert-Amyl methyl ether (by EPA Method 8260B)

mg/kg = All results reported in milligrams per kilogram
 DUP = Duplicate Analysis
 -- = Not Analyzed
 < = Less than indicated laboratory reporting limit
 # / # = Alternative sample location identifier.
 ** = BTEX and MTBE analytical results by EPA Method 8021B prior to 2003, and from 2003 to present by EPA Method 8260B.

Sources:

- 1 Alton Geoscience, 1994, Remedial Action Plan for ARCO Station 1919, 660 Via de la Valle, Solana Beach, California (Case No. T01911/H05166-002), dated May 13, 1994.
- 2 Alton Geoscience, 1992, Transmittal of Data for Soil Borings and Ground Water Monitoring Wells, ARCO Station 1919, 660 Via de la Valle, Solana Beach, California, dated May 4, 1992, Appended Enseco Laboratory Report, dated March 10, 1992.
- 3 SECOR International Incorporated, 2000, Site Assessment Report, ARCO Facility #1919, 660 Via de la Valle, Del Mar, CA, SAM Case # H05166, dated October 20, 2000.
- 4 Alton Geoscience, 1993, Transmittal of Data for Borings and Ground Water Monitoring Wells at ARCO Station 1919, 660 Via de la Valle, Solana Beach, California, dated December 3, 1993; Appended Transglobal Environmental Geochemistry Laboratory Report, dated October 11, 1993.
- 5 Alton Geoscience, 1992, Laboratory Results of Soil Samples Collected Following Product Line Leak at ARCO Station 1919, 660 Via de la Valle, Solana Beach, California, dated September 23, 1992.
- 6 Alton Geoscience, 1994, Transmittal of Data for Ground Water Monitoring and Vapor Extraction Wells at ARCO Station 1919, 660 Via de la Valle, Solana Beach, California, dated May 11, 1994; Appended Transglobal Environmental Geochemistry Laboratory Report, dated April 16, 1994.
- 7 SECOR International Incorporated, 1995, Air Sparging Well Installation Letter Report, ARCO Facility # 1919, 660 Via de la Valle, Solana Beach, California, dated June 8, 1995.
- 8 SECOR International Incorporated, 2003, Fuel Line/Dispenser Replacement Report, ARCO Facility No. 1919, 660 Via de la Valle, Solana Beach, California, dated March 28, 2003.
- 9 Del Mar Laboratory Report attached as Appendix J.

TABLE 2B
SOIL PHYSICAL PROPERTIES ANALYTICAL DATA
ARCO Facility #1919

Sample ID	Date Sampled	Depth (ft)	Moisture Content (% wt)	Total Pore Fluid Saturations (% Pv ⁽¹⁾)	25.0 PSI Confining Stress Native State Effective Permeability to Air ⁽²⁾ (millidarcy)	Density		Porosity, % Vb ⁽³⁾			Total Organic Carbon (mg/kg)
			(ASTM D2216)			Bulk (g/cc)	Grain (g/cc)	Total	Air Filled	Effective	(Walkley-Black)
MW-24	10/01/03	5.5'	65.1	>99.9	0.651	1.02	2.61	54.0	<0.1	17.3	18,500
MW-25	10/01/03	5.5'	46.0	>99.9	77.2	1.24	2.64	44.8	<0.1	19.7	4,000
MW-26	10/02/03	5.5'	6.3	21.1	1,561	1.46	2.65	45.0	35.5	31.1	540

Notes:

Pv = Pore volume
 PSI = Pounds per square inch
 g/cc = grams per cubic centimeter
 Vb = Bulk volume
 mg/kg = milligram per kilogram

⁽¹⁾ Water = 0.9981 g/cc; Hydrocarbon = 0.7500 g/cc

⁽²⁾ Native State, as received with pore fluids in place

⁽³⁾ Total Porosity = no pore fluids in place; all interconnected pore channels; Air Filled = pore channels not occupied by pore fluids

TABLE 3
SUMMARY OF STATIC WATER LEVEL ELEVATION DATA
ARCO Facility #1919

Well Identification / Surveyed Well Elevation ¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation ² (Feet MSL)	Source
MW-1 14.02	10/10/90	9.15	0.37	5.15 ³	1
	12/19/91	Not Measured			
	02/18/92	8.29	0.25	5.92 ³	2
	05/26/92	8.26	0.20	5.91 ³	
	07/30/92	8.15	0.19	6.01 ³	
	10/08/92	7.99	0.03	6.05 ³	
	01/14/93	7.69	0.01	6.33 ³	
	02/20/93	7.69	Sheen	6.33	
	03/16/93	7.77	Sheen	6.25	
	04/14/93	7.64	Sheen	6.38	
	05/10/93	7.99	0.03	6.05 ³	
	09/02/93	8.13	0.05	5.93 ³	
	10/01/93	Well Destroyed			
MW-2 12.93	10/10/90	8.26	0.00	4.67	1
	12/19/91	Not Measured			
	02/18/92	7.07	0.00	5.86	2
	05/26/92	7.13	0.04	5.83 ³	
	07/30/92	7.16	0.28	5.98 ³	
	10/08/92	6.98	0.03	5.97 ³	
	01/14/93	6.98	Sheen	5.95	
	02/20/93	6.77	Sheen	6.16	
	03/16/93	6.72	Sheen	6.21	
	04/14/93	6.80	Sheen	6.13	
	05/10/93	6.90	Sheen	6.03	
	09/02/93	7.08	Sheen	5.85	
	10/01/93	Well Destroyed			
MW-3 12.55	10/10/90	7.69	0.00	4.86	1
	12/19/91	8.09	0.00	4.46	
	02/18/92	6.81	0.00	5.74	2
	05/26/92	6.40	0.00	6.15	
	07/30/92	6.80	0.00	5.75	
	10/08/92	6.98	0.00	5.57	
	01/14/93	8.38	0.00	4.17	
	02/20/93	6.86	0.00	5.69	
	03/16/93	6.84	0.00	5.71	
	04/14/93	6.94	0.00	5.61	
	05/10/93	6.79	0.00	5.79	
	09/02/93	6.99	0.00	5.56	
	10/01/93	Well Destroyed			
MW-4 13.34	10/10/90	8.14	0.04	5.23 ³	1
	12/19/91	Not Measured			
	02/18/92	7.42	0.01	5.93 ³	2
	05/26/92	7.50	0.10	5.92 ³	
	07/30/92	6.80	Sheen	6.54	
	10/08/92	6.98	Sheen	6.36	
	01/14/93	7.28	Sheen	6.06	
	02/20/93	7.01	Sheen	6.33	
	03/16/93	7.12	Sheen	6.22	

TABLE 3
SUMMARY OF STATIC WATER LEVEL ELEVATION DATA
ARCO Facility #1919

Well Identification / Surveyed Well Elevation ¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation ² (Feet MSL)	Source
MW-4 cont'd	04/14/93	7.14	Sheen	6.20	2
	05/10/93	7.29	0.00	6.05	
	09/02/93	7.37	0.00	5.97	
	10/01/93	Well Destroyed			
MW-5 14.54	10/10/90	9.27	0.00	5.27	1
	12/19/91	Not Measured			2
	02/18/92	8.88	0.28	5.87 ³	
	05/26/92	8.92	0.34	5.88 ³	
	07/30/92	8.86	0.36	5.95 ³	
	10/08/92	8.68	0.21	6.02 ³	
	01/14/93	8.56	0.01	5.99 ³	
	02/20/93	8.16	Sheen	6.38	
	03/16/93	8.31	0.02	6.25 ³	
	04/14/93	8.47	0.09	6.14 ³	
	05/10/93	8.64	0.16	6.02 ³	
	09/02/93	8.88	0.30	5.88 ³	
	10/01/93	Well Destroyed			
	MW-6 13.01 16.11	10/10/90	8.64	0.00	4.37
12/19/91		8.90	0.00	4.11	2
02/18/92		7.91	0.00	5.10	
05/26/92		7.95	0.00	5.06	
07/30/92		7.92	0.00	5.09	
10/08/92		7.90	0.00	5.11	
01/14/93		7.81	0.00	5.20	
02/20/93		7.47	0.00	5.54	
03/16/93		7.65	0.00	5.36	
04/14/93		7.80	0.00	5.21	
05/10/93		7.81	0.00	5.20	
09/02/93		7.97	0.00	5.04	
06/29/94		9.94	0.00	6.17	3
09/28/94		10.14	0.00	5.97	
03/31/95		9.53	0.00	6.58	
06/06/95		9.72	0.00	6.39	
09/05/95		9.98	0.00	6.13	
10/26/95		10.08	0.00	6.03	
01/29/96		9.95	0.00	6.16	
04/11/96		10.04	0.00	6.07	
07/10/96		10.10	0.00	6.01	
10/01/96		10.18	0.00	5.93	
03/20/97		9.85	0.00	6.26	
06/06/97		10.13	0.00	5.98	
09/16/97		10.19	0.00	5.92	
12/10/97		10.09	0.00	6.02	
03/23/98		9.66	0.00	6.45	
06/05/98		9.98	0.00	6.13	
09/14/98		10.03	0.00	6.08	
11/23/98		10.06	0.00	6.05	
03/22/99		10.04	0.00	6.07	
06/09/99		9.95	0.00	6.16	

TABLE 3

Well Identification / Surveyed Well Elevation¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation²(Feet MSL)	Source
MW-6 Cont'd <					

TABLE 3

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TABLE 3
SUMMARY OF STATIC WATER LEVEL ELEVATION DATA
ARCO Facility #1919

Well Identification / Surveyed Well Elevation ¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation ² (Feet MSL)	Source
MW-10 16.59 cont'd	07/25/03	11.02	0.00	5.72	4
	11/21/03	11.16	0.00	5.43	
	02/25/04	11.16	0.00	5.43	5
	06/21/04	11.21	0.00	5.38	
	09/13/04	11.38	0.00	5.21	
	12/20/04	11.21	0.00	5.38	
	03/07/05	10.48	0.00	6.11	
	05/16/05	10.94	0.00	5.65	
	09/12/05	10.16	0.00	6.43	
MW-11 13.79 13.57	02/18/92	7.96	0.00	5.83	2
	05/26/92	7.90	0.00	5.89	
	07/30/92	8.04	0.00	5.75	2
	10/08/92	7.97	0.00	5.82	
	01/14/93	8.78	0.00	5.01	
	02/21/03	7.45	0.00	6.34	
	03/16/93	7.61	0.00	6.18	
	04/14/93	7.78	0.00	6.01	
	05/10/93	7.85	0.00	5.94	3
	09/02/93	8.01	0.00	5.78	
	06/29/94	7.52	0.00	6.05	
	09/28/94	7.66	0.00	5.91	
	03/31/95	7.00	0.00	6.57	
	06/06/95	7.24	0.00	6.33	
	09/05/95	7.50	0.00	6.07	
	10/26/95	7.58	0.00	5.99	
	01/29/96	7.44	0.00	6.13	
	04/11/96	7.58	0.00	5.99	
	07/10/96	7.57	0.00	6.00	
	10/01/96	7.68	0.00	5.89	
	03/20/97	7.38	0.00	6.19	
	06/06/97	7.63	0.00	5.94	
	09/16/97	7.71	0.00	5.86	
	12/10/97	7.59	0.00	5.98	
	03/23/98	7.17	0.00	6.40	
	06/05/98	7.45	0.00	6.12	
	09/14/98	7.54	0.00	6.03	
	11/23/98	7.58	0.00	5.99	
	03/22/99	7.53	0.00	6.04	
	06/09/99	7.44	0.00	6.13	
	09/28/99	7.55	0.00	6.02	
	12/22/99	7.64	0.00	5.93	
	03/08/00	7.47	0.00	6.32	
	05/10/00	7.57	0.00	6.22	
	08/22/00	7.66	0.00	6.13	
	11/14/00	7.74	0.00	6.05	4
	02/06/01	7.45	0.00	6.34	
	05/08/01	7.42	0.00	6.37	
	07/16/01	7.57	0.00	6.22	
	10/09/01	7.72	0.00	6.07	

TABLE 3
SUMMARY OF STATIC WATER LEVEL ELEVATION DATA
ARCO Facility #1919

Well Identification / Surveyed Well Elevation ¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation ² (Feet MSL)	Source
MW-11 cont'd 13.40	01/28/02	7.62	0.00	6.17	4
	04/17/02	7.55	0.00	6.24	
	07/09/02	7.65	0.00	6.14	
	10/21/02	7.96	0.00	5.83	
	02/21/03	7.78	0.00	6.01	
	05/08/03	7.87	0.00	5.92	
	07/25/03	7.85	0.00	5.94	
	11/21/03	8.17	0.00	5.23	
	02/25/04	7.95	0.00	5.45	5
	06/21/04	7.98	0.00	5.42	
	09/13/04	8.22	0.00	5.18	
	12/20/04	8.00	0.00	5.40	
	03/07/05	7.27	0.00	6.13	
	05/16/05	7.74	0.00	5.66	
	09/12/05	8.05	0.00	5.35	
MW-12 14.27	02/18/92	8.56	0.00	5.71	2
	05/26/92	8.36	0.00	5.91	
	07/30/92	8.22	0.00	6.05	
	10/08/92	8.25	0.00	6.02	
	01/14/93	8.20	0.00	6.07	
	02/21/03	7.90	0.00	6.37	
	03/16/93	8.00	0.00	6.27	
	04/14/93	8.20	0.00	6.07	
	05/10/93	7.15	0.00	7.12	
	09/02/93	8.27	0.00	6.00	
MW-13 12.93	10/01/93	Well Destroyed			3
	02/18/92	7.04	0.00	5.89	
	05/26/92	7.04	0.00	5.89	
	07/30/92	6.77	0.00	6.16	
	10/08/92	6.77	0.00	6.16	
	01/14/93	6.85	0.00	6.08	
	02/21/03	6.51	0.00	6.42	
	03/16/93	6.62	0.00	6.31	
	04/14/93	6.75	0.00	6.18	
	05/10/93	6.79	0.00	6.14	
	09/02/93	6.80	0.00	6.13	
	06/29/94	6.68	0.00	6.25	
	09/28/94	6.90	0.00	6.03	
	03/31/95	6.12	0.00	6.81	
	06/06/95	6.51	0.00	6.42	
	09/05/95	6.75	0.00	6.18	
	10/26/95	6.82	0.00	6.11	
	01/29/96	6.69	0.00	6.24	
	04/11/96	6.84	0.00	6.09	
	07/10/96	6.83	0.00	6.10	
	10/01/96	6.91	0.00	6.02	
	03/20/97	6.73	0.00	6.20	
	06/06/97	6.82	0.00	6.11	
	09/16/97	6.84	0.00	6.09	

TABLE 3

SUMMARY OF STATIC WATER LEVEL ELEVATION DATA

ARCO Facility #1919

Well Identification / Surveyed Well Elevation¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation²(Feet MSL)	Source
MW-13 cont'd 					

TABLE 3

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TABLE 3
SUMMARY OF STATIC WATER LEVEL ELEVATION DATA
ARCO Facility #1919

Well Identification / Surveyed Well Elevation ¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation ² (Feet MSL)	Source
MW-16 cont'd	02/20/93	7.17	0.00	5.94	2
	03/16/93	7.51	0.00	5.60	
	04/14/93	8.12	0.00	4.99	
	05/10/93	7.78	0.00	5.33	
	09/02/93	8.04	0.00	5.07	
	06/29/94	7.82	0.00	5.29	3
	09/28/94	8.18	0.00	4.93	
	03/31/95	7.11	0.00	6.00	
	06/06/95	7.71	0.00	5.40	
	09/05/95	8.02	0.00	5.09	
	10/26/95	8.08	0.00	5.03	
	01/29/96	7.73	0.00	5.38	
	04/11/96	8.18	0.00	4.93	
	07/10/96	8.33	0.00	4.78	
	10/01/96	8.41	0.00	4.70	
	03/20/97	8.01	0.00	5.10	
	06/06/97	8.22	0.00	4.89	
	09/16/97	8.24	0.00	4.87	
	12/10/97	8.13	0.00	4.98	
	03/23/98	7.73	0.00	5.38	
	06/05/98	8.05	0.00	5.06	
	09/14/98	8.19	0.00	4.92	
	11/23/98	8.26	0.00	4.85	
	03/22/99	8.15	0.00	4.96	
	06/09/99	7.84	0.00	5.27	
	09/28/99	8.12	0.00	4.99	
	12/22/99	8.44	0.00	4.67	
	03/08/00	7.81	0.00	5.30	
	05/10/00	8.00	0.00	5.11	
	08/22/00	8.26	0.00	4.85	
	11/14/00	8.40	0.00	4.71	4
	02/06/01	7.93	0.00	5.18	
	05/08/01	8.08	0.00	5.03	
	07/16/01	8.30	0.00	4.81	
	10/09/01	8.35	0.00	4.76	
	01/28/02	7.92	0.00	5.19	
	04/17/02	7.69	0.00	5.42	
	07/09/02	7.96	0.00	5.15	
	10/21/02	8.41	0.00	4.70	
	02/21/03	7.91	0.00	5.20	
	05/08/03	8.08	0.00	5.03	
13.08	07/25/03	8.01	0.00	5.10	5
	11/21/03	8.50	0.00	4.58	
	02/25/04	8.28	0.00	4.80	
	06/21/04	8.34	0.00	4.74	
	09/13/04	8.56	0.00	4.52	
	12/20/04	8.48	0.00	4.60	
	03/07/05	7.52	0.00	5.56	
	05/16/05	8.17	0.00	4.91	
	09/12/05	8.52	0.00	4.56	

TABLE 3
SUMMARY OF STATIC WATER LEVEL ELEVATION DATA
ARCO Facility #1919

Well Identification / Surveyed Well Elevation ¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation ² (Feet MSL)	Source
MW-17 12.74 15.18	07/30/92	6.99	0.00	4.93	2
	10/08/92	7.00	0.00	5.74	
	01/14/93	6.82	Trace	5.92	
	02/20/93	6.48	Trace	6.26	
	03/16/93	6.64	Trace	6.10	
	04/14/93	6.75	Trace	5.99	
	05/10/93	6.89	Trace	5.85	
	09/02/93	7.05	0.00	5.69	3
	06/29/94	9.13	0.00	6.05	
	09/28/94	9.37	0.00	5.81	
	03/31/95	8.69	0.00	6.49	
	06/06/95	8.96	0.00	6.22	
	09/05/95	9.21	0.00	5.97	
	10/26/95	9.28	0.00	5.90	
	01/29/96	9.09	0.00	6.09	
	04/11/96	9.26	0.00	5.92	
	07/10/96	9.31	0.00	5.87	
	10/01/96	9.41	0.00	5.77	
	03/20/97	9.12	0.00	6.06	
	06/06/97	9.35	0.00	5.83	
	09/16/97	9.42	0.00	5.76	
	12/10/97	9.31	0.00	5.87	
	03/23/98	8.89	0.00	6.29	
	06/05/98	9.18	0.00	6.00	
	09/14/98	9.26	0.00	5.92	
	11/23/98	9.31	0.00	5.87	
	03/22/99	9.25	0.00	5.93	
	06/09/99	9.13	0.00	6.05	
	09/28/99	9.27	0.00	5.91	
	12/22/99	9.36	0.00	5.82	4
	03/08/00	9.14	0.00	3.60	
	05/10/00	9.28	0.00	3.46	
	08/22/00	9.40	0.00	3.34	
	11/14/00	9.39	0.00	3.35	
	02/06/01	9.14	0.00	3.60	
	05/08/01	9.15	0.00	3.59	
	07/16/01	9.29	0.00	3.45	
	10/09/01	9.44	0.00	3.30	
	01/28/02	9.30	0.00	3.44	
	04/17/02	9.21	0.00	3.53	
	07/09/02	9.32	0.00	3.42	
	10/21/02	9.60	0.00	3.14	
	02/21/03	9.39	0.00	3.35	
15.00	05/08/03	9.57	0.00	3.17	5
	07/25/03	9.43	0.00	3.31	
	11/21/03	9.96	0.00	5.04	
	02/25/04	9.60	0.00	5.40	
	06/21/04	9.70	0.00	5.30	
	09/13/04	9.91	0.00	5.09	
	12/20/04	9.78	0.00	5.22	
	03/07/05	8.96	0.00	6.04	

TABLE 3
SUMMARY OF STATIC WATER LEVEL ELEVATION DATA
ARCO Facility #1919

Well Identification / Surveyed Well Elevation ¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation ² (Feet MSL)	Source
MW-17 cont'd	05/16/05	9.48	0.00	5.52	5
	09/12/05	9.76	0.00	5.24	
MW-18 13.75	07/30/92	8.34	0.00	5.41	2
	10/08/92	8.45	0.00	5.30	
	01/14/93	7.81	0.00	5.94	
	02/20/93	7.60	0.00	6.15	
	03/16/93	7.82	0.00	5.93	
	04/14/93	8.57	0.00	5.18	
	05/10/93	8.62	0.00	5.13	
	09/02/93	8.95	0.00	4.80	
	06/29/94	8.77	0.00	4.98	
	09/28/94	9.03	0.00	4.72	
	03/31/95	8.12	0.00	5.63	
	06/06/95	8.59	0.00	5.16	
	09/05/95	8.86	0.00	4.89	3
	10/26/95	8.92	0.00	4.83	
	01/29/96	8.55	0.00	5.20	
	04/11/96	9.03	0.00	4.72	
	07/10/96	9.17	0.00	4.58	
	10/01/96	9.25	0.00	4.50	
	03/20/97	7.82	0.00	5.93	
	06/06/97	9.08	0.00	4.67	
	09/16/97	9.15	0.00	4.60	
	12/10/97	9.02	0.00	4.73	
	03/23/98	8.57	0.00	5.18	
	06/05/98	8.91	0.00	4.84	
	09/14/98	9.07	0.00	4.68	
	11/23/98	9.12	0.00	4.63	
	03/22/99	9.03	0.00	4.72	
	06/09/99	8.68	0.00	5.07	
	09/28/99	9.04	0.00	4.71	
	12/22/99	9.32	0.00	4.43	
	03/08/00	8.69	0.00	5.06	4
	05/10/00	8.85	0.00	4.90	
	08/22/00	9.13	0.00	4.62	
	11/14/00	9.18	0.00	4.57	
	02/06/01	8.75	0.00	5.00	
	05/08/01	8.91	0.00	4.84	
	07/16/01	9.16	0.00	4.59	
	10/09/01	9.26	0.00	4.49	
	01/28/02	8.73	0.00	5.02	
	04/17/02	8.55	0.00	5.20	
	07/09/02	8.85	0.00	4.90	
	10/21/02	9.24	0.00	4.51	
	02/21/03	8.74	0.00	5.01	
	05/08/03	8.91	0.00	4.84	
	07/25/03	8.78	0.00	4.97	
	11/21/03	9.36	0.00	4.38	5
	02/25/04	9.03	0.00	4.71	
13.74	06/21/04	9.18	0.00	4.56	

TABLE 3
SUMMARY OF STATIC WATER LEVEL ELEVATION DATA
ARCO Facility #1919

Well Identification / Surveyed Well Elevation ¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation ² (Feet MSL)	Source
MW-18 cont'd	09/13/04	9.37	0.00	4.37	5
	12/20/04	9.32	0.00	4.42	
	03/07/05	8.22	0.00	5.52	
	05/16/05	8.98	0.00	4.76	
	09/12/05	9.30	0.00	4.44	
MW-19A* 13.42 13.42 <					

TABLE 3
SUMMARY OF STATIC WATER LEVEL ELEVATION DATA
ARCO Facility #1919

Well Identification / Surveyed Well Elevation ¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation ² (Feet MSL)	Source
MW-19A* cont'd	02/25/04	8.45	0.00	4.94	5
	06/21/04	8.54	0.00	4.85	
	09/13/04	8.91	0.00	4.48	
	12/20/04	8.76	0.00	4.63	
	03/07/05	7.76	0.00	5.63	
	05/16/05	8.42	0.00	4.97	
	09/12/05	8.79	0.00	4.60	
MW-19B 16.82	06/29/94	Data Not Reported			3
	09/28/94	Data Not Reported			
	03/31/95	10.12	0.00	6.70	
	06/06/95	10.33	0.00	6.49	
	09/05/95	10.54	0.00	6.28	
	10/26/95	10.66	0.00	6.16	
	01/29/96	10.47	0.00	6.35	
	04/11/96	10.61	0.00	6.21	
	07/10/96	10.67	0.00	6.15	
	10/01/96	10.73	0.00	6.09	
	03/20/97	10.43	0.00	6.39	
	06/06/97	10.67	0.00	6.15	
	09/16/97	10.74	0.00	6.08	
	12/10/97	10.67	0.00	6.15	
	03/23/98	10.26	0.00	6.56	
	06/05/98	10.51	0.00	6.31	
	09/14/98	10.60	0.00	6.22	
	11/23/98	10.62	0.00	6.20	
	03/22/99	10.58	0.00	6.24	
	06/09/99	10.53	0.00	6.29	
	09/28/99	10.62	0.00	6.20	
	12/22/99	10.68	0.00	6.14	
	03/08/00	10.57	0.00	6.25	
	05/10/00	10.66	0.00	6.16	
	08/22/00	10.78	0.00	6.04	
	11/14/00	10.76	0.00	6.06	4
	02/06/01	10.52	0.00	6.30	
	05/08/01	10.50	0.00	6.32	
	07/16/01	10.47	0.00	6.35	
	10/09/01	10.81	0.00	6.01	
	01/28/02	10.76	0.00	6.06	
	04/17/02	10.74	0.00	6.08	
	07/09/02	10.78	0.00	6.04	
	10/21/02	11.14	0.00	5.68	
	02/21/03	10.99	0.00	5.83	
	05/08/03	11.15	0.00	5.67	
	07/25/03	11.08	0.00	5.74	
	11/21/03	11.42	0.00	5.25	
	02/25/04	11.28	0.00	5.39	5
	06/21/04	11.36	0.00	5.31	
	09/13/04	11.48	0.00	5.19	
	12/20/04	11.30	0.00	5.37	
	03/07/05	10.62	0.00	6.05	
16.67					

TABLE 3

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TABLE 3

Well Identification / Surveyed Well Elevation¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation²(Feet MSL)	Source
MW-22	07/09/02	5.24	0.00	4.57	4
cont'd	10/21/02	5.55	0.00	4.26	
	02/21/03	5.27	0.00	4.54	
	05/08/03	5.25	0.00	4.56	
	07/25/03	5.05	0.00	4.76	
9.78	11/21/03	5.65	0.00	4.13	
	02/25/04	5.49	0.00	4.29	5
	06/21/04	5.61	0.00	4.17	
	09/13/04	5.91	0.00	3.87	
	12/20/04	5.77	0.00	4.01	
	03/07/05	4.63	0.00	5.15	
	05/16/05	5.31	0.00	4.47	
	09/12/05	5.93	0.00	3.85	
MW-23	07/25/00	7.33	0.00	5.12	3
12.45	08/22/00	7.54	0.00	4.91	4
	11/14/00	7.87	0.00	4.58	
	02/06/01	7.26	0.00	5.19	
	05/08/01	7.52	0.00	4.93	
	07/16/01	7.78	0.00	4.67	
	10/09/01	7.77	0.00	4.68	
	01/28/02	7.23	0.00	5.22	
	04/17/02	6.99	0.00	5.46	
	07/09/02	7.28	0.00	5.17	
	10/21/02	7.80	0.00	4.65	
	02/21/03	7.13	0.00	5.32	
	05/08/03	7.44	0.00	5.01	
	07/25/03	7.39	0.00	5.06	
12.42	11/21/03	7.98	0.00	4.44	5
	02/25/04	7.73	0.00	4.69	
	06/21/04	7.81	0.00	4.61	
	09/13/04	7.99	0.00	4.43	
	12/20/04	7.94	0.00	4.48	
	03/07/05	6.67	0.00	5.75	
	05/16/05	7.49	0.00	4.93	
	09/12/05	7.80	0.00	4.62	
MW-24	11/21/03	4.64	0.00	4.19	
8.83	02/25/04	4.28	0.00	4.55	
	06/21/04	4.49	0.00	4.34	
	09/13/04	4.78	0.00	4.05	
	12//20/04	4.55	0.00	4.28	
	03/07/05	3.50	0.00	5.33	
	05/16/05	4.32	0.00	4.51	
	09/12/05	4.76	0.00	4.07	
MW-25	11/21/03	3.21	0.00	4.00	
7.21	02/25/04	2.83	0.00	4.38	

TABLE 3
SUMMARY OF STATIC WATER LEVEL ELEVATION DATA
ARCO Facility #1919

Well Identification / Surveyed Well Elevation ¹ (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation ² (Feet MSL)	Source
MW-25 cont'd	06/21/04	Not Measured - Inaccessible			
	09/13/04	3.24	0.00	3.97	
	12/20/04	3.09	0.00	4.12	
	03/07/05	1.99	0.00	5.22	
	05/16/05	2.81	0.00	4.40	
	09/12/05	3.24	0.00	3.97	
MW-26 29.82	11/21/03	23.93	0.00	5.89	5
	02/25/04	23.79	0.00	6.03	
	06/21/04	23.83	0.00	5.99	
	09/13/04	24.14	0.00	5.68	
	12/20/04	23.93	0.00	5.89	
	03/07/05	23.19	0.00	6.63	
	05/16/05	23.61	0.00	6.21	
	09/12/05	23.91	0.00	5.91	

Notes:

¹ = Elevations are in feet above mean sea level (MSL).

² = Groundwater elevation in feet MSL = Surveyed Well Elevation - Depth to Water

³ = Elevations adjusted by adding (0.75 x LPH thickness) to measured water elevations.

LPH = Liquid - Phase Hydrocarbons

* Depth to groundwater measured including LPH thickness. LPH thickness was not reported by Alton Geoscience. Actual groundwater elevation not calculated by Alton Geoscience.

** MW-19 was renamed MW-19A after the installation of another MW-19 (now MW-19B).

Sources:

- 1 Alton Geoscience, 1992, Second Quarter 1992 Status Report on Fluid-Level Monitoring and Ground Water Sampling at ARCO Station 1919, 660 Via de la Valle, Solana Beach, California (Unauthorized Release No. T1985; Control No.H05166-002), dated July 21, 1992.
- 2 Alton Geoscience, 1994, Third Quarter 1993 Ground Water Monitoring and Sampling Report, ARCO Station 1919, 660 Via de la Valle, Solana Beach, California (Unauthorized Release No. T1985; Control No. H05166-002), dated January 19, 1994.
- 3 SECOR International Incorporated, 2000, Site Assessment Report, ARCO Facility #1919, 660 Via de la Valle, Del Mar, CA, SAM Case # H05166, dated October 20, 2000.
- 4 SECOR International Incorporated, 2004, ARCO Quarterly Groundwater Remediation Report [Fourth-2003], dated January 30, 2004.
- 5 SECOR International Incorporated, 2005, ARCO Quarterly Groundwater Monitoring Report [Third-2005], dated October 15, 2005.

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-1	10/10/90	Not Sampled - Measured LPH Thickness							1
	12/19/91	Not Sampled - Measured LPH Thickness							
	02/18/92	Not Sampled - Measured LPH Thickness							2
	05/26/92	Not Sampled - Measured LPH Thickness							
	07/30/92	Not Sampled - Measured LPH Thickness							
	10/08/92	Not Sampled - Measured LPH Thickness							
	01/14/93	Not Sampled - Measured LPH Thickness							
	02/20/93	Not Sampled - LPH Sheen							
	03/16/93	Not Sampled - LPH Sheen							
	04/14/93	Not Sampled - LPH Sheen							
	05/10/93	Not Sampled - Measured LPH Thickness							
	09/02/93	Not Sampled - Measured LPH Thickness							
	10/01/93	Well Destroyed							
MW-2	10/10/90	31,000	5,600	1,600	1,000	2,000	--	--	1
	12/19/91	Not Sampled - Measured LPH Thickness							2
	02/18/92	ND	11,000	990	920	1,200	--	ND	
	05/26/92	Not Sampled - Measured LPH Thickness							
	07/30/92	Not Sampled - Measured LPH Thickness							
	10/08/92	Not Sampled - Measured LPH Thickness							
	01/14/93	Not Sampled - LPH Sheen							
	02/20/93	Not Sampled - LPH Sheen							
	03/16/93	Not Sampled - LPH Sheen							
	04/14/93	Not Sampled - LPH Sheen							
	05/10/93	Not Sampled - LPH Sheen							
	09/02/93	Not Sampled - LPH Sheen							
	10/01/93	Well Destroyed							
MW-3	10/10/90	13,000	4,800	190	110	240	--	ND	1
	12/19/91	36,000	12,000	610	710	2,800	--	ND	2
	02/18/92	54,000	8,100	210	440	1,500	--	ND	
	05/26/92	9,575	2,391	556	667	2,751	--	ND	
	07/30/92	20,083	6,060.9	593	667.6	1,916.3	--	--	
	10/08/92	41,797	9,806.2	569.2	1,700.9	3,899.2	--	--	
	01/14/93	32,200	9,500	288	812	4,486	--	--	
	02/20/93	Not Sampled							
	03/16/93	Not Sampled							
	04/14/93	89,000	4,700	140	330	750	--	--	
	05/10/93	Not Sampled							
	09/02/93	74,000	13,000	1,400	1,200	3,600	--	--	
	10/01/93	Well Destroyed							
MW-4	10/10/90	Not Sampled - Measured LPH Thickness							1
	12/19/91	Not Sampled - Measured LPH Thickness							2
	02/18/92	Not Sampled - Measured LPH Thickness							
	05/26/92	Not Sampled - Measured LPH Thickness							
	07/30/92	Not Sampled - LPH Sheen							
	10/08/92	Not Sampled - LPH Sheen							
	01/14/93	Not Sampled - LPH Sheen							
	02/20/93	Not Sampled - LPH Sheen							
	03/16/93	Not Sampled - LPH Sheen							
	04/14/93	Not Sampled - LPH Sheen							

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-4 cont'd	05/10/93	Not Sampled							2
	09/02/93	33,000	900	1,100	1,900	7,300	--	--	
	10/01/93	Well Destroyed							
MW-5	10/10/90	15,000	1,700	3,000	110	1,200	--	ND	1
	12/19/91	Not Sampled - Measured LPH Thickness							2
	02/18/92	Not Sampled - Measured LPH Thickness							
	05/26/92	Not Sampled - Measured LPH Thickness							
	07/30/92	Not Sampled - Measured LPH Thickness							
	10/08/92	Not Sampled - Measured LPH Thickness							
	01/14/93	Not Sampled - Measured LPH Thickness							
	02/20/93	Not Sampled - LPH Sheen							
	03/16/93	Not Sampled - Measured LPH Thickness							
	04/14/93	Not Sampled - Measured LPH Thickness							
	05/10/93	Not Sampled - Measured LPH Thickness							
	09/02/93	Not Sampled - Measured LPH Thickness							
	10/01/93	Well Destroyed							
MW-6	10/10/90	4,000	920	340	40	330	--	--	1
	12/19/91	ND	55	0.7	ND	45	--	ND	2
	02/18/92	ND	430	76	68	140	--	ND	
	05/26/92	1,986	874	280	136.5	587	--	--	
	07/30/92	4,049	794.8	275.6	210.1	736	--	--	
	10/08/92	16,176	2,525.3	1,160.9	869.2	2,861.9	--	--	
	01/14/93	5,336	899.1	301.4	198.5	685.4	--	--	
	02/20/93	Not Sampled							
	03/16/93	Not Sampled							
	04/14/93	9,800	730	130	140	440	--	--	
	05/10/93	Not Sampled							
	09/02/93	6,100	1,200	76	27	1,200	--	--	
	06/29/94	4,800	960	27	300	790	--	--	
	09/28/94	7,600	1,300	13	380	1,100	--	--	
	03/31/95	7,000	2,100	38	510	1,300	--	--	
	06/06/95	Not Sampled - Well Reduction Program							
	09/05/95	Not Sampled - Well Reduction Program							
	10/26/95	13,000	3,500	48	1,000	2,100	--	--	
	01/30/96	22,000	4,600	25	940	1,600	--	--	
	04/11/96	3,200	850	14	150	200	--	--	
	07/10/96	Not Sampled - Well Reduction Program							
	10/01/96	Not Sampled - Well Reduction Program							
	03/20/97 ^{NP}	17,000	6,700	<60	1,500	680	29,000 ¹	--	
	06/06/97	Not Sampled - Well Reduction Program							
	09/16/97	Not Sampled - Well Reduction Program							
	12/10/97	Not Sampled - Well Reduction Program							
	03/23/98 ^{NP}	16,000	5,500	38	1,300	420	13,000	--	
	06/05/98	Not Sampled - Well Reduction Program							
	09/14/98	Not Sampled - Well Reduction Program							
	11/23/98	Not Sampled - Well Reduction Program							
	03/22/99 ^{NP}	15,000	4,100	<30	1,100	220	<1,000	--	
	06/09/99	Not Sampled - Well Reduction Program							
	09/28/99	Not Sampled - Well Reduction Program							

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-6 Cont'd	12/22/99	Not Sampled - Well Reduction Program							3
	03/08/00 ^{NP}	5,900	2,300	<25	730	<75	850	--	
	05/10/00	Not Sampled - Well Reduction Program							
	08/22/00	Not Sampled - Well Reduction Program							
	11/14/00	Not Sampled - Well Reduction Program							4
	02/06/01 ^{NP}	<5,000	740	2.5	560	19	66	--	
	05/08/01	Not Sampled - Well Reduction Program							
	07/16/01	Not Sampled - Well Reduction Program							
	10/09/01	Not Sampled - Well Reduction Program							
	01/28/02 ^{NP}	1,400	110	0.52	96	2.2	150	--	
	04/17/02 ^{NP}	2,400	370	1.4	820	4.7	150	--	
	07/09/02	Not Sampled - Well Reduction Program							
	10/21/02 ^{NP}	3,500	750	<5.0	630	<15	110	--	
	02/21/03 ^{NP}	<500	0.56	<0.50	2.7	<1.5	62	--	
	05/08/03	Not Sampled - Well Reduction Program							
	07/25/03 ^{NP}	740	47	0.83	79	<1.5	120	--	
	11/21/03 ^{NP}	820	30	<0.50	32	<1.5	94	--	
	11/21/03	670	110	<0.50	140	<1.5	200	--	
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	59	--	
	06/21/04	Not Sampled - Well Reduction Program							5
	09/13/04	Not Sampled - Well Reduction Program							
	12/20/04	Not Sampled - Well Reduction Program							
	03/08/05	<100	<0.50	<0.50	<0.50	<1.0	3.5	--	
	05/16/05	Not Sampled - Well Reduction Program							
	09/12/05	Not Sampled - Well Reduction Program							
MW-7	10/10/90	38,000	11,000	2,900	3,400	7,000	--	2	1
	12/19/91	Not Sampled - Measured LPH Thickness							2
	02/18/92	Not Sampled - Measured LPH Thickness							
	05/26/92	Not Sampled - Measured LPH Thickness							
	07/30/92	Not Sampled - LPH Sheen							
	10/08/92	Not Sampled - LPH Sheen							
	01/14/93	Not Sampled - LPH Sheen							
	02/20/93	Not Sampled - Measured LPH Thickness							
	03/16/93	Not Sampled - Measured LPH Thickness							
	04/14/93	Not Sampled - Measured LPH Thickness							
	05/10/93	Not Sampled - Measured LPH Thickness							
	09/02/93	Not Sampled - LPH Sheen							
	10/01/93	Well Destroyed							
MW-8	10/10/91	Not Sampled - Measured LPH Thickness							1
	12/19/91	Not Sampled - Measured LPH Thickness							2
	02/18/92	Not Sampled - Measured LPH Thickness							
	05/26/92	Not Sampled - Measured LPH Thickness							
	07/30/92	Not Sampled - Measured LPH Thickness							
	10/08/92	Not Sampled - Measured LPH Thickness							
	01/14/93	Not Sampled - Measured LPH Thickness							
	02/20/93	Not Sampled - LPH Sheen							
	03/16/93	Not Sampled - LPH Sheen							
	04/14/93	Not Sampled - Measured LPH Thickness							
	05/10/93	Not Sampled - Measured LPH Thickness							
	09/02/93	Not Sampled - Measured LPH Thickness							
	10/01/93	Well Destroyed							

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source	
MW-10	02/18/92	ND	2.1	2.6	ND	0.8	--	ND	2	
	05/26/92	658	87	96	13	122	--	ND		
	07/30/92	ND	21	14.1	4.5	12.8	--	--		
	10/08/92	1,969	137.3	165.2	47.8	314.1	--	--		
	01/14/93	ND	11.2	4	ND	7.5	--	--		
	02/21/03	Not Sampled								
	03/16/93	Not Sampled								
	04/14/93	270	8	9.1	ND	12	--	--		
	05/10/93	Not Sampled								
	09/02/93	230	21	23	3.4	45	--	--		
	06/29/94	ND	0.89	ND	0.71	ND	--	--	3	
	09/28/94	<50	1	<0.50	0.53	<1.0	--	--		
	03/31/95	450	1.3	0.95	0.48	1.5	--	--		
	06/06/95	Not Sampled - Well Reduction Program								
	09/09/95	Not Sampled - Well Reduction Program								
	10/26/95	Not Sampled - Well Reduction Program								
	01/30/96	<500	<0.5	<0.5	<0.5	<1.5	--	--		
	04/11/96	<500	<0.5	1.1	<0.5	<1.5	--	--		
	07/10/96	Not Sampled - Well Reduction Program								
	10/01/96	Not Sampled - Well Reduction Program								
	03/20/97 ^{NP}	<500	<0.5	<0.5	<0.5	<1.5	<10	--		
	06/06/97	Not Sampled - Well Reduction Program								
	09/16/97	Not Sampled - Well Reduction Program								
	12/10/97	Not Sampled - Well Reduction Program								
	03/23/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--		
	06/05/98	Not Sampled - Well Reduction Program								
	09/14/98	Not Sampled - Well Reduction Program								
	11/23/98	Not Sampled - Well Reduction Program								
	03/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--		
	06/09/99	Not Sampled - Well Reduction Program								
	09/28/99	Not Sampled - Well Reduction Program								
	12/22/99	Not Sampled - Well Reduction Program								
	03/08/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	10	--		
	05/10/00	Not Sampled - Well Reduction Program								
	08/22/00	Not Sampled - Well Reduction Program								
	11/14/00	Not Sampled - Well Reduction Program								
	02/06/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		4
	05/08/01	Not Sampled - Well Reduction Program								
	07/16/01	Not Sampled - Well Reduction Program								
	10/09/01	Not Sampled - Well Reduction Program								
	01/28/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	04/17/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	07/09/02	Not Sampled - Well Reduction Program								
	10/21/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.50	<1.0	--		
	02/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	1.1	--		
	05/08/03	Not Sampled - Well Reduction Program								
	07/25/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	11/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	06/21/04	Not Sampled - Well Reduction Program								

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-10 cont'd	09/13/04	Not Sampled - Well Reduction Program							5
	12/20/04	Not Sampled - Well Reduction Program							
	03/08/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0	--	
	05/16/05	Not Sampled - Well Reduction Program							
	09/12/05	Not Sampled - Well Reduction Program							
MW-11	02/18/92	ND	1.1	ND	ND	ND	--	ND	2
	05/26/92	ND	ND	ND	ND	ND	--	ND	
	07/30/92	ND	ND	ND	ND	0.9	--	--	
	10/08/92	ND	ND	ND	ND	ND	--	--	
	01/14/93	ND	0.9	ND	ND	ND	--	--	
	02/21/03	Not Sampled							3
	03/16/93	Not Sampled							
	04/14/93	210	ND	ND	ND	ND	--	--	
	05/10/93	Not Sampled							
	09/02/93	140	ND	ND	ND	ND	--	--	
	06/29/94	60	1.2	ND	ND	1.3	--	--	
	09/28/94	<50	<0.50	<0.50	<0.50	<1.0	--	--	
	03/31/95	110	<0.3	<0.3	<0.3	<0.6	--	--	
	06/06/95	<500	<0.5	<0.5	<0.5	<1.5	--	--	
	09/05/95	80	<0.3	<0.3	<0.3	<0.6	--	--	
	10/26/95	<50	<0.5	<0.5	<0.5	<1.5	--	--	
	01/30/96	<500	<0.5	<0.5	<0.5	<1.5	--	--	
	04/11/96	<500	<0.5	<0.5	<0.5	<1.5	--	--	
	07/10/96	<50	<0.3	<0.3	<0.3	<0.6	24	--	
	10/01/96	<500	<0.5	<0.5	<0.5	<1.5	24	--	
	03/20/97 ^{NP}	<500	<0.5	<0.5	<0.5	<1.5	--	--	
	06/06/97 ^{NP}	<500	<0.5	0.5	<0.5	2	<10	--	
	09/16/97 ^{NP}	<50	<0.50	<0.50	<0.50	<1.5	<10	--	
	12/10/97 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	03/23/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	06/05/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	09/14/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	130	--	
	11/23/98	<50	<0.50	<0.50	<0.50	<1.0	<10	--	
	03/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	06/09/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	09/28/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	12/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	03/08/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<5.0 ¹	--	
	05/10/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	08/22/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	11/14/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	4
	02/06/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	05/08/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	07/16/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	10/09/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	01/28/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	04/17/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	07/09/02	Not Sampled - Well Reduction Program							
	10/21/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	02/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	05/08/03	Not Sampled - Well Reduction Program							

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-11 cont'd	07/25/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	4
	11/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	06/21/04	Not Sampled - Well Reduction Program							5
	09/13/04	Not Sampled - Well Reduction Program							
	12/20/04	Not Sampled - Well Reduction Program							
	03/08/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0	--	
	05/16/05	Not Sampled - Well Reduction Program							
	09/12/05	Not Sampled - Well Reduction Program							
MW-12	02/18/92	19,000	1,900	3,200	2,100	11,000	--	28	2
	05/26/92	56,001	4,680	8,460	3,540	18,540	--	--	
	07/30/92	42,893	2,709	4,673	3,696.5	21,516	--	--	
	10/08/92	113,077	4,724	7,262	6,343.9	23,142.1	--	--	
	01/14/93	94,962	3,463	6,161	3,397	17,783	--	--	
	02/21/03	Not Sampled							
	03/16/93	Not Sampled							
	04/14/93	48,000	2,500	3,500	1,600	7,500	--	--	
	05/10/93	Not Sampled							
	09/02/93	54,000	4,100	5,500	2,500	13,000	--	--	
	10/01/93	Well Destroyed							
MW-13	02/18/92	ND	ND	0.5	ND	ND	--	ND	
	05/26/92	ND	ND	ND	ND	ND	--	--	
	07/30/92	ND	ND	ND	ND	ND	--	--	
	10/08/92	ND	4	8.6	14.5	21.7	--	--	
	01/14/93	ND	ND	1.2	ND	ND	--	--	
	02/21/03	Not Sampled							
	03/16/93	Not Sampled							
	04/14/93	ND	ND	ND	ND	ND	--	--	
	05/10/93	Not Sampled							
	09/02/93	ND	ND	ND	ND	ND	--	--	
	06/29/94	ND	ND	ND	ND	ND	--	--	
	09/28/94	<50	<0.50	<0.50	<0.50	<1.0	--	--	3
	03/31/95	59	<0.3	<0.3	<0.3	<0.6	--	--	
	06/06/95	Not Sampled - Well Reduction Program							
	09/05/95	Not Sampled - Well Reduction Program							
	10/26/95	Not Sampled - Well Reduction Program							
	01/30/96	<500	<0.5	<0.5	<0.5	<1.5	--	--	
	04/11/96	Not Sampled - Well Reduction Program							
	07/10/96	Not Sampled - Well Reduction Program							
	10/01/96	Not Sampled - Well Reduction Program							
	03/20/97 ^{NP}	<500	<0.5	<0.5	<0.5	<1.5	<10	--	
	06/06/97	Not Sampled - Well Reduction Program							
	09/16/97	Not Sampled - Well Reduction Program							
	12/10/97	Not Sampled - Well Reduction Program							
	03/23/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	06/05/98	Not Sampled - Well Reduction Program							
	09/14/98	Not Sampled - Well Reduction Program							
	11/23/98	Not Sampled - Well Reduction Program							
	03/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	06/09/99	Not Sampled - Well Reduction Program							

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source	
MW-13 cont'd	09/28/99	Not Sampled - Well Reduction Program							3	
	12/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--		
	03/08/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<5.0 ¹	--		
	05/10/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	2.8 ¹	--		
	08/22/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	39	--		
	11/14/00 ^{NP}	<500	<0.50	0.54	<0.50	<1.5	2	--	4	
	02/06/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	4	--		
	05/08/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	7	--		
	07/16/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	33	--		
	10/09/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	22	--		
	01/28/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	1.1	--		
	04/17/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	07/09/02 ^{NP}	Not Sampled - Well Reduction Program								
	10/21/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	1.8	--		
	02/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	05/08/03	Not Sampled - Well Reduction Program								
	07/25/03	Not Sampled - Well Reduction Program								
	11/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	18	--		
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	17	--	5	
	06/21/04	Not Sampled - Well Reduction Program								
	09/13/04	Not Sampled - Well Reduction Program								
	12/20/04	Not Sampled - Well Reduction Program								
	03/08/05	<100	<0.50	<0.50	<0.50	<1.0	9.3	--		
	05/16/05	Not Sampled - Well Reduction Program								
	09/12/05	Not Sampled - Well Reduction Program								
MW-14	02/18/92	ND	ND	ND	ND	ND	--	ND		2
	05/26/92	ND	ND	ND	ND	ND	--	--		
	07/30/92	ND	ND	ND	ND	0.9	--	--		
	10/08/92	ND	ND	ND	ND	ND	--	--		
	01/14/93	ND	1.3	ND	ND	ND	--	--		
	02/21/03	Not Sampled								
	03/16/93	Not Sampled								
	04/14/93	ND	ND	ND	ND	ND	--	--		
	05/10/93	Not Sampled								
	09/02/93	ND	ND	ND	ND	ND	--	--		
	06/29/94	ND	ND	ND	ND	ND	--	--	3	
	09/28/94	<50	<0.50	<0.50	<0.50	<1.0	--	--		
	03/31/95	59	<0.3	<0.3	<0.3	<0.6	--	--		
	06/06/95	Not Sampled - Well Reduction Program								
	09/05/95	Not Sampled - Well Reduction Program								
	10/26/95	Not Sampled - Well Reduction Program								
	01/30/96	<500	<0.5	<0.5	<0.5	<1.5	--	--		
	04/11/96	Not Sampled - Well Reduction Program								
	07/10/96	Not Sampled - Well Reduction Program								
	10/01/96	Not Sampled - Well Reduction Program								
	03/20/97 ^{NP}	<500	<0.5	<0.5	<0.5	<1.5	<10	--		
	06/06/97	Not Sampled - Well Reduction Program								
	09/16/97	Not Sampled - Well Reduction Program								
	12/10/97	Not Sampled - Well Reduction Program								
	03/23/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--		

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-14 cont'd	06/05/98	Not Sampled - Well Reduction Program							3
	09/14/98	Not Sampled - Well Reduction Program							
	11/23/98	Not Sampled - Well Reduction Program							
	03/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	06/09/99	Not Sampled - Well Reduction Program							
	09/28/99	Not Sampled - Well Reduction Program							
	12/22/99	Not Sampled - Well Reduction Program							
	03/08/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<5.0 ¹	--	
	05/10/00	Not Sampled - Well Reduction Program							
	08/22/00	Not Sampled - Well Reduction Program							
	11/14/00	Not Sampled - Well Reduction Program							4
	02/06/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	05/08/01	Not Sampled - Well Reduction Program							
	07/16/01	Not Sampled - Well Reduction Program							
	10/09/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	01/28/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	04/17/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	07/09/02	Not Sampled - Well Reduction Program							
	10/21/02	Not Sampled - Well Reduction Program							
	02/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	05/08/03	Not Sampled - Well Reduction Program							
	07/25/03	Not Sampled - Well Reduction Program							
	11/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	2.0	--	
	06/21/04	Not Sampled - Well Reduction Program							5
	09/13/04	Not Sampled - Well Reduction Program							
	12/20/04	Not Sampled - Well Reduction Program							
	03/07/05	<100	<0.50	<2.0	<0.50	<1.0	<1.0	--	
	05/16/05	Not Sampled - Well Reduction Program							
	09/13/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0	--	
02/18/92	8,000	1,800	5,400	850	5,000	--	ND	2	
05/26/92	2,649	2,091	2,736	876	3,476	--	--		
07/30/92	Well Not Sampled							3	
10/08/92	Well Not Sampled								
01/14/93	Well Not Sampled								
02/20/93	Well Not Sampled								
03/16/93	Well Not Sampled								
04/14/93	Well Not Sampled								
05/10/93	Well Not Sampled								
09/02/93	120,000	10,000	6,200	1,700	5,300	--	--		
06/29/94	53,000	8,000	180	1,400	600	--	--		
09/28/94	13,0000	5,500	11,000	7,000	24,000	--	--		
03/31/95	65,000	10,000	360	1,100	680	--	--		
06/06/95	Not Sampled - Well Reduction Program								
09/05/95	Not Sampled - Well Reduction Program								
10/26/95	29,000	12,000	420	1,400	480	--	--		
01/30/96	76,000	6,200	92	290	120	--	--		
04/11/96	24,000	11,000	96	510	190	--	--		
07/10/96	Not Sampled - Well Reduction Program								
10/01/96	Not Sampled - Well Reduction Program								

TABLE 4A

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source	
MW-15 cont'd	03/20/97 ^{NP}	25,000	12,000	740	1,100	1,400	210,000 ¹	--	3	
	06/06/97	Not Sampled - Well Reduction Program								
	09/16/97	Not Sampled - Well Reduction Program								
	12/10/97	Not Sampled - Well Reduction Program								
	03/23/98 ^{NP}	6200	2500	150	480	260	32,000	--		
	06/05/98	Not Sampled - Well Reduction Program								
	09/14/98	Not Sampled - Well Reduction Program								
	11/23/98	Not Sampled - Well Reduction Program								
	03/22/99 ^{NP}	22000	7600	<60	760	160	180,000	--		
	06/09/99	Not Sampled - Well Reduction Program								
	09/28/99	2,7000	11,000	120	1,400	1,200	52,000 ¹	--		
	12/22/99 ^{NP}	12,000	4,100	<60	440	440	32,000	--		
	03/08/00 ^{NP}	<500	72	<1.0	27	3.8	200	--		
	05/10/00 ^{NP}	23,000	7,700	<100	780	<300	45,000	--		
	08/22/00 ^{NP}	23,000	14,000	<130	2,000	<380	46,000	--		
	11/14/00 ^{NP}	10,000	6,900	350	1,000	420	18,000	--	4	
	02/06/01 ^{NP}	3,100	1,100	<50	190	<150	15,000	--		
	05/08/01 ^{NP}	19,000	10,000	82	1,700	300	20,000	--		
	07/16/01 ^{NP}	20,000	11,000	71	1,900	390	18,000	--		
	10/09/01 ^{NP}	24,000	12,000	<250	1,800	<750	17,000	--		
	01/28/02 ^{NP}	4,000	1,300	<62	390	<190	24,000	--		
	04/17/02 ^{NP}	1,700	540	<100	180	<300	7,400	--		
	07/09/02	Not Sampled - Well Reduction Program								
	10/21/02	Not Sampled - Well Not Accessible								
	02/21/03	Not Sampled - Well Not Accessible								
	05/08/03	Not Sampled - Well Not Accessible								
	07/25/03	Not Sampled - Well Not Accessible								
	11/21/03	Not Sampled - LPH Sheen								
	02/25/04	2,400	910	<200	<200	<600	51,000	--		5
	06/21/04	Not Sampled - Well Reduction Program								
	09/13/04	Not Sampled - Well Reduction Program								
	12/20/04	Not Sampled - Well Reduction Program								
	03/08/05	Not Analyzed - Suspect Sample								
	05/16/05	Not Sampled - Well Reduction Program								
	09/13/05	9,200	1,700	<100	170	<200	16,000	--		
MW-16	02/18/92	ND	ND	0.6	ND	ND	--	ND	2	
	05/26/92	ND	12.5	ND	ND	ND	--	--		
	07/30/92	ND	0.6	0.9	ND	ND	--	--		
	10/08/92	ND	35.8	2.5	ND	ND	--	--		
	01/14/93	ND	51.6	1.2	ND	ND	--	--		
	02/20/93	Not Sampled								
	03/16/93	Not Sampled								
	04/14/93	1000	22	ND	ND	ND	--	--		
	05/10/93	Not Sampled								
	09/02/93	7,100	160	ND	ND	ND	--	--		
	06/29/94	13,000	2,800	1,600	270	830	--	--	3	
	09/28/94	38,000	5,900	<50	200	130	--	--		
	03/31/95	39,000	5,500	<30	440	120	--	--		
	06/06/95	Not Sampled - Well Reduction Program								
	09/05/95	Not Sampled - Well Reduction Program								
	10/26/95	Not Sampled - Well Reduction Program								

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-16 cont'd	01/30/96	25,000	1,700	5.9	110	5.6	--	--	3
	04/11/96	Not Sampled - Well Reduction Program							
	07/10/96	Not Sampled - Well Reduction Program							
	10/01/96	Not Sampled - Well Reduction Program							
	03/20/97 ^{NP}	<500	24	<0.5	1.3	<1.5	45,000 ¹	--	
	06/06/97	Not Sampled - Well Reduction Program							
	09/16/97	Not Sampled - Well Reduction Program							
	12/10/97 ^{NP}	1,100	320	<12	<12	<24	19,000	--	
	03/23/98 ^{NP}	<500	110	<0.50	1.5	2.8	19,000	--	
	06/05/98 ^{NP}	<500	20	<0.50	<0.50	<1.5	19,000	--	
	09/14/98 ^{NP}	170	14	<0.50	<0.50	<1.5	23,000	--	
	11/23/98 ^{NP}	<500	<5	<5	<5	<10	20,000	--	
	03/22/99 ^{NP}	<500	1.2	1.1	<0.50	<1.5	20,000	--	
	06/09/99 ^{NP}	<500	8.9	<0.50	<0.50	<1.5	12,000 ⁻¹	--	
	09/28/99 ^{NP}	<500	9.3	<1.2	<1.2	<2.4	10,000	--	
	12/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	9,100	--	
	03/08/00 ^{NP}	2,600	2.3	<1.5	2.1	5.2	11,000	--	
	05/10/00 ^{NP}	4,600	26	<10	<10	<30	14,000	--	
	08/22/00 ^{NP}	<500	<40	<40	<40	<120	9,000	--	
	11/14/00 ^{NP}	<1,000	<40	<40	<40	<120	9,400	--	
	02/06/01 ^{NP}	<1,000	<40	<40	<40	<120	13,000	--	4
	05/08/01 ^{NP}	<500	<25	<25	<25	<75	10,000	--	
	07/16/01 ^{NP}	<500	<40	<40	<40	<120	9,300	--	
	10/09/01 ^{NP}	<500	<100	<100	<100	<300	9,000	--	
	01/28/02 ^{NP}	<500	<40	<40	<40	<120	7,000	--	
	04/17/02 ^{NP}	<500	<50	<50	<50	<150	5,000	--	
	07/09/02	Not Sampled - Well Reduction Program							
	10/21/02 ^{NP}	<500	<50	<50	<50	<150	7,200	--	
	02/21/03 ^{NP}	<500	<50	<50	<50	<150	5,600	--	
	05/08/03	Not Sampled - Well Reduction Program							
	07/25/03	Not Sampled - Well Reduction Program							
	11/21/03 ^{NP}	<500	<25	<25	<25	<75	6,300	--	
	11/21/03	<500	<50	<50	<50	<150	6,000	--	
	02/25/04	<500	<50	<50	<50	<150	5,900	--	
	06/21/04	Not Sampled - Well Reduction Program							5
	09/13/04	Not Sampled - Well Reduction Program							
12/20/04	Not Sampled - Well Reduction Program								
03/08/05	Not Analyzed - Suspect Sample								
05/16/05	Not Sampled - Well Reduction Program								
09/12/05	Not Sampled - Well Reduction Program								
07/30/92	1,570	169.5	253.3	54.1	321.3	--	ND	2	
10/08/92	20,834	3,083.5	3,086.8	785.2	2,623.5	--	--		
01/14/93	Well Not Sampled								
02/20/93	Well Not Sampled								
03/16/93	Well Not Sampled								
04/14/93	Well Not Sampled								
05/10/93	Well Not Sampled								
09/02/93	7,600	1,200	1,200	160	810	--	--	3	
06/29/94	13,000	2,800	1,600	270	830	--	--		
09/28/94	13,000	1,900	1,700	260	1,000	--	--		
03/31/95	7,700	1,600	120	210	170	--	--		

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-1	10/10/90	Not Sampled - Measured LPH Thickness							1
	12/19/91	Not Sampled - Measured LPH Thickness							
	02/18/92	Not Sampled - Measured LPH Thickness							2
	05/26/92	Not Sampled - Measured LPH Thickness							
	07/30/92	Not Sampled - Measured LPH Thickness							
	10/08/92	Not Sampled - Measured LPH Thickness							
	01/14/93	Not Sampled - Measured LPH Thickness							
	02/20/93	Not Sampled - LPH Sheen							
	03/16/93	Not Sampled - LPH Sheen							
	04/14/93	Not Sampled - LPH Sheen							
	05/10/93	Not Sampled - Measured LPH Thickness							
	09/02/93	Not Sampled - Measured LPH Thickness							
	10/01/93	Well Destroyed							
MW-2	10/10/90	31,000	5,600	1,600	1,000	2,000	--	--	1
	12/19/91	Not Sampled - Measured LPH Thickness							2
	02/18/92	ND	11,000	990	920	1,200	--	ND	
	05/26/92	Not Sampled - Measured LPH Thickness							
	07/30/92	Not Sampled - Measured LPH Thickness							
	10/08/92	Not Sampled - Measured LPH Thickness							
	01/14/93	Not Sampled - LPH Sheen							
	02/20/93	Not Sampled - LPH Sheen							
	03/16/93	Not Sampled - LPH Sheen							
	04/14/93	Not Sampled - LPH Sheen							
	05/10/93	Not Sampled - LPH Sheen							
	09/02/93	Not Sampled - LPH Sheen							
	10/01/93	Well Destroyed							
MW-3	10/10/90	13,000	4,800	190	110	240	--	ND	1
	12/19/91	36,000	12,000	610	710	2,800	--	ND	2
	02/18/92	54,000	8,100	210	440	1,500	--	ND	
	05/26/92	9,575	2,391	556	667	2,751	--	ND	
	07/30/92	20,083	6,060.9	593	667.6	1,916.3	--	--	
	10/08/92	41,797	9,806.2	569.2	1,700.9	3,899.2	--	--	
	01/14/93	32,200	9,500	288	812	4,486	--	--	
	02/20/93	Not Sampled							
	03/16/93	Not Sampled							
	04/14/93	89,000	4,700	140	330	750	--	--	
	05/10/93	Not Sampled							
	09/02/93	74,000	13,000	1,400	1,200	3,600	--	--	
	10/01/93	Well Destroyed							
MW-4	10/10/90	Not Sampled - Measured LPH Thickness							1
	12/19/91	Not Sampled - Measured LPH Thickness							2
	02/18/92	Not Sampled - Measured LPH Thickness							
	05/26/92	Not Sampled - Measured LPH Thickness							
	07/30/92	Not Sampled - LPH Sheen							
	10/08/92	Not Sampled - LPH Sheen							
	01/14/93	Not Sampled - LPH Sheen							
	02/20/93	Not Sampled - LPH Sheen							
	03/16/93	Not Sampled - LPH Sheen							
	04/14/93	Not Sampled - LPH Sheen							

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source	
MW-4 cont'd	05/10/93	Not Sampled							2	
	09/02/93	33,000	900	1,100	1,900	7,300	--	--		
	10/01/93	Well Destroyed								
MW-5	10/10/90	15,000	1,700	3,000	110	1,200	--	ND	1	
	12/19/91	Not Sampled - Measured LPH Thickness								
	02/18/92	Not Sampled - Measured LPH Thickness							2	
	05/26/92	Not Sampled - Measured LPH Thickness								
	07/30/92	Not Sampled - Measured LPH Thickness								
	10/08/92	Not Sampled - Measured LPH Thickness								
	01/14/93	Not Sampled - Measured LPH Thickness								
	02/20/93	Not Sampled - LPH Sheen								
	03/16/93	Not Sampled - Measured LPH Thickness								
	04/14/93	Not Sampled - Measured LPH Thickness								
	05/10/93	Not Sampled - Measured LPH Thickness								
	09/02/93	Not Sampled - Measured LPH Thickness								
	10/01/93	Well Destroyed								
	MW-6	10/10/90	4,000	920	340	40	330	--	--	1
12/19/91		ND	55	0.7	ND	45	--	ND		
02/18/92		ND	430	76	68	140	--	ND	2	
05/26/92		1,986	874	280	136.5	587	--	--		
07/30/92		4,049	794.8	275.6	210.1	736	--	--		
10/08/92		16,176	2,525.3	1,160.9	869.2	2,861.9	--	--		
01/14/93		5,336	899.1	301.4	198.5	685.4	--	--		
02/20/93		Not Sampled								
03/16/93		Not Sampled								
04/14/93		9,800	730	130	140	440	--	--		
05/10/93		Not Sampled								
09/02/93		6,100	1,200	76	27	1,200	--	--		
06/29/94		4,800	960	27	300	790	--	--		3
09/28/94		7,600	1,300	13	380	1,100	--	--		
03/31/95		7,000	2,100	38	510	1,300	--	--		
06/06/95		Not Sampled - Well Reduction Program								
09/05/95		Not Sampled - Well Reduction Program								
10/26/95		13,000	3,500	48	1,000	2,100	--	--		
01/30/96		22,000	4,600	25	940	1,600	--	--		
04/11/96		3,200	850	14	150	200	--	--		
07/10/96		Not Sampled - Well Reduction Program								
10/01/96		Not Sampled - Well Reduction Program								
03/20/97 ^{NP}		17,000	6,700	<60	1,500	680	29,000 ¹	--		
06/06/97		Not Sampled - Well Reduction Program								
09/16/97		Not Sampled - Well Reduction Program								
12/10/97		Not Sampled - Well Reduction Program								
03/23/98 ^{NP}		16,000	5,500	38	1,300	420	13,000	--		
06/05/98		Not Sampled - Well Reduction Program								
09/14/98		Not Sampled - Well Reduction Program								
11/23/98		Not Sampled - Well Reduction Program								
03/22/99 ^{NP}		15,000	4,100	<30	1,100	220	<1,000	--		
06/09/99		Not Sampled - Well Reduction Program								
09/28/99		Not Sampled - Well Reduction Program								

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-6 Cont'd	12/22/99	Not Sampled - Well Reduction Program							3
	03/08/00 ^{NP}	5,900	2,300	<25	730	<75	850	--	
	05/10/00	Not Sampled - Well Reduction Program							
	08/22/00	Not Sampled - Well Reduction Program							
	11/14/00	Not Sampled - Well Reduction Program							
	02/06/01 ^{NP}	<5,000	740	2.5	560	19	66	--	4
	05/08/01	Not Sampled - Well Reduction Program							
	07/16/01	Not Sampled - Well Reduction Program							
	10/09/01	Not Sampled - Well Reduction Program							
	01/28/02 ^{NP}	1,400	110	0.52	96	2.2	150	--	
	04/17/02 ^{NP}	2,400	370	1.4	820	4.7	150	--	
	07/09/02	Not Sampled - Well Reduction Program							
	10/21/02 ^{NP}	3,500	750	<5.0	630	<15	110	--	
	02/21/03 ^{NP}	<500	0.56	<0.50	2.7	<1.5	62	--	
	05/08/03	Not Sampled - Well Reduction Program							
	07/25/03 ^{NP}	740	47	0.83	79	<1.5	120	--	
	11/21/03 ^{NP}	820	30	<0.50	32	<1.5	94	--	
	11/21/03	670	110	<0.50	140	<1.5	200	--	
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	59	--	
	06/21/04	Not Sampled - Well Reduction Program							5
	09/13/04	Not Sampled - Well Reduction Program							
	12/20/04	Not Sampled - Well Reduction Program							
	03/08/05	<100	<0.50	<0.50	<0.50	<1.0	3.5	--	
	05/16/05	Not Sampled - Well Reduction Program							
	09/12/05	Not Sampled - Well Reduction Program							
MW-7	10/10/90	38,000	11,000	2,900	3,400	7,000	--	2	1
	12/19/91	Not Sampled - Measured LPH Thickness							2
	02/18/92	Not Sampled - Measured LPH Thickness							
	05/26/92	Not Sampled - Measured LPH Thickness							
	07/30/92	Not Sampled - LPH Sheen							
	10/08/92	Not Sampled - LPH Sheen							
	01/14/93	Not Sampled - LPH Sheen							
	02/20/93	Not Sampled - Measured LPH Thickness							
	03/16/93	Not Sampled - Measured LPH Thickness							
	04/14/93	Not Sampled - Measured LPH Thickness							
	05/10/93	Not Sampled - Measured LPH Thickness							
	09/02/93	Not Sampled - LPH Sheen							
	10/01/93	Well Destroyed							
MW-8	10/10/91	Not Sampled - Measured LPH Thickness							1
	12/19/91	Not Sampled - Measured LPH Thickness							2
	02/18/92	Not Sampled - Measured LPH Thickness							
	05/26/92	Not Sampled - Measured LPH Thickness							
	07/30/92	Not Sampled - Measured LPH Thickness							
	10/08/92	Not Sampled - Measured LPH Thickness							
	01/14/93	Not Sampled - Measured LPH Thickness							
	02/20/93	Not Sampled - LPH Sheen							
	03/16/93	Not Sampled - LPH Sheen							
	04/14/93	Not Sampled - Measured LPH Thickness							
	05/10/93	Not Sampled - Measured LPH Thickness							
	09/02/93	Not Sampled - Measured LPH Thickness							
	10/01/93	Well Destroyed							

TABLE 4A

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source	
MW-10	02/18/92	ND	2.1	2.6	ND	0.8	--	ND	2	
	05/26/92	658	87	96	13	122	--	ND		
	07/30/92	ND	21	14.1	4.5	12.8	--	--		
	10/08/92	1,969	137.3	165.2	47.8	314.1	--	--		
	01/14/93	ND	11.2	4	ND	7.5	--	--		
	02/21/03	Not Sampled								
	03/16/93	Not Sampled								
	04/14/93	270	8	9.1	ND	12	--	--		
	05/10/93	Not Sampled								
	09/02/93	230	21	23	3.4	45	--	--		
	06/29/94	ND	0.89	ND	0.71	ND	--	--	3	
	09/28/94	<50	1	<0.50	0.53	<1.0	--	--		
	03/31/95	450	1.3	0.95	0.48	1.5	--	--		
	06/06/95	Not Sampled - Well Reduction Program								
	09/09/95	Not Sampled - Well Reduction Program								
	10/26/95	Not Sampled - Well Reduction Program								
	01/30/96	<500	<0.5	<0.5	<0.5	<1.5	--	--		
	04/11/96	<500	<0.5	1.1	<0.5	<1.5	--	--		
	07/10/96	Not Sampled - Well Reduction Program								
	10/01/96	Not Sampled - Well Reduction Program								
	03/20/97 ^{NP}	<500	<0.5	<0.5	<0.5	<1.5	<10	--		
	06/06/97	Not Sampled - Well Reduction Program								
	09/16/97	Not Sampled - Well Reduction Program								
	12/10/97	Not Sampled - Well Reduction Program								
	03/23/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--		
	06/05/98	Not Sampled - Well Reduction Program								
	09/14/98	Not Sampled - Well Reduction Program								
	11/23/98	Not Sampled - Well Reduction Program								
	03/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--		
	06/09/99	Not Sampled - Well Reduction Program								
	09/28/99	Not Sampled - Well Reduction Program								
	12/22/99	Not Sampled - Well Reduction Program								
	03/08/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	10	--		
	05/10/00	Not Sampled - Well Reduction Program								
	08/22/00	Not Sampled - Well Reduction Program								
	11/14/00	Not Sampled - Well Reduction Program								4
	02/06/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	05/08/01	Not Sampled - Well Reduction Program								
	07/16/01	Not Sampled - Well Reduction Program								
	10/09/01	Not Sampled - Well Reduction Program								
	01/28/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	04/17/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	07/09/02	Not Sampled - Well Reduction Program								
	10/21/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.50	<1.0	--		
	02/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	1.1	--		
	05/08/03	Not Sampled - Well Reduction Program								
	07/25/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	11/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	5	
	06/21/04	Not Sampled - Well Reduction Program								

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919
All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-10 cont'd	09/13/04	Not Sampled - Well Reduction Program							5
	12/20/04	Not Sampled - Well Reduction Program							
	03/08/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0	--	
	05/16/05	Not Sampled - Well Reduction Program							
	09/12/05	Not Sampled - Well Reduction Program							
MW-11	02/18/92	ND	1.1	ND	ND	ND	--	ND	2
	05/26/92	ND	ND	ND	ND	ND	--	ND	
	07/30/92	ND	ND	ND	ND	0.9	--	--	
	10/08/92	ND	ND	ND	ND	ND	--	--	
	01/14/93	ND	0.9	ND	ND	ND	--	--	
	02/21/03	Not Sampled							3
	03/16/93	Not Sampled							
	04/14/93	210	ND	ND	ND	ND	--	--	
	05/10/93	Not Sampled							
	09/02/93	140	ND	ND	ND	ND	--	--	
	06/29/94	60	1.2	ND	ND	1.3	--	--	
	09/28/94	<50	<0.50	<0.50	<0.50	<1.0	--	--	
	03/31/95	110	<0.3	<0.3	<0.3	<0.6	--	--	
	06/06/95	<500	<0.5	<0.5	<0.5	<1.5	--	--	
	09/05/95	80	<0.3	<0.3	<0.3	<0.6	--	--	
	10/26/95	<50	<0.5	<0.5	<0.5	<1.5	--	--	
	01/30/96	<500	<0.5	<0.5	<0.5	<1.5	--	--	
	04/11/96	<500	<0.5	<0.5	<0.5	<1.5	--	--	
	07/10/96	<50	<0.3	<0.3	<0.3	<0.6	24	--	
	10/01/96	<500	<0.5	<0.5	<0.5	<1.5	24	--	
	03/20/97 ^{NP}	<500	<0.5	<0.5	<0.5	<1.5	--	--	
	06/06/97 ^{NP}	<500	<0.5	0.5	<0.5	2	<10	--	
	09/16/97 ^{NP}	<50	<0.50	<0.50	<0.50	<1.5	<10	--	
	12/10/97 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	03/23/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	06/05/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	09/14/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	130	--	
	11/23/98	<50	<0.50	<0.50	<0.50	<1.0	<10	--	
	03/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	06/09/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	09/28/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	12/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	03/08/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<5.0 ¹	--	
	05/10/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	08/22/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	11/14/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	4
	02/06/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	05/08/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	07/16/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	10/09/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	01/28/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	04/17/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	07/09/02	Not Sampled - Well Reduction Program							
	10/21/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	02/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	05/08/03	Not Sampled - Well Reduction Program							

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-11 cont'd	07/25/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	4
	11/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	06/21/04	Not Sampled - Well Reduction Program							5
	09/13/04	Not Sampled - Well Reduction Program							
	12/20/04	Not Sampled - Well Reduction Program							
	03/08/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0	--	
	05/16/05	Not Sampled - Well Reduction Program							
	09/12/05	Not Sampled - Well Reduction Program							
MW-12	02/18/92	19,000	1,900	3,200	2,100	11,000	--	28	2
	05/26/92	56,001	4,680	8,460	3,540	18,540	--	--	
	07/30/92	42,893	2,709	4,673	3,696.5	21,516	--	--	
	10/08/92	113,077	4,724	7,262	6,343.9	23,142.1	--	--	
	01/14/93	94,962	3,463	6,161	3,397	17,783	--	--	
	02/21/03	Not Sampled							
	03/16/93	Not Sampled							
	04/14/93	48,000	2,500	3,500	1,600	7,500	--	--	
	05/10/93	Not Sampled							
	09/02/93	54,000	4,100	5,500	2,500	13,000	--	--	
	10/01/93	Well Destroyed							
MW-13	02/18/92	ND	ND	0.5	ND	ND	--	ND	
	05/26/92	ND	ND	ND	ND	ND	--	--	
	07/30/92	ND	ND	ND	ND	ND	--	--	
	10/08/92	ND	4	8.6	14.5	21.7	--	--	
	01/14/93	ND	ND	1.2	ND	ND	--	--	
	02/21/03	Not Sampled							
	03/16/93	Not Sampled							
	04/14/93	ND	ND	ND	ND	ND	--	--	
	05/10/93	Not Sampled							
	09/02/93	ND	ND	ND	ND	ND	--	--	
	06/29/94	ND	ND	ND	ND	ND	--	--	
	09/28/94	<50	<0.50	<0.50	<0.50	<1.0	--	--	3
	03/31/95	59	<0.3	<0.3	<0.3	<0.6	--	--	
	06/06/95	Not Sampled - Well Reduction Program							
	09/05/95	Not Sampled - Well Reduction Program							
	10/26/95	Not Sampled - Well Reduction Program							
	01/30/96	<500	<0.5	<0.5	<0.5	<1.5	--	--	
	04/11/96	Not Sampled - Well Reduction Program							
	07/10/96	Not Sampled - Well Reduction Program							
	10/01/96	Not Sampled - Well Reduction Program							
	03/20/97 ^{NP}	<500	<0.5	<0.5	<0.5	<1.5	<10	--	
	06/06/97	Not Sampled - Well Reduction Program							
	09/16/97	Not Sampled - Well Reduction Program							
	12/10/97	Not Sampled - Well Reduction Program							
	03/23/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	06/05/98	Not Sampled - Well Reduction Program							
	09/14/98	Not Sampled - Well Reduction Program							
	11/23/98	Not Sampled - Well Reduction Program							
	03/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	06/09/99	Not Sampled - Well Reduction Program							

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source	
MW-13 cont'd	09/28/99	Not Sampled - Well Reduction Program							3	
	12/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--		
	03/08/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<5.0 ¹	--		
	05/10/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	2.8 ¹	--		
	08/22/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	39	--		
	11/14/00 ^{NP}	<500	<0.50	0.54	<0.50	<1.5	2	--		
	02/06/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	4	--		
	05/08/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	7	--		
	07/16/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	33	--		
	10/09/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	22	--		
	01/28/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	1.1	--		
	04/17/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	07/09/02 ^{NP}	Not Sampled - Well Reduction Program								
	10/21/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	1.8	--		
	02/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	05/08/03	Not Sampled - Well Reduction Program								
	07/25/03	Not Sampled - Well Reduction Program								
	11/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--		
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	18	--		
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	17	--		
	5	06/21/04	Not Sampled - Well Reduction Program							
		09/13/04	Not Sampled - Well Reduction Program							
		12/20/04	Not Sampled - Well Reduction Program							
		03/08/05	<100	<0.50	<0.50	<0.50	<1.0	9.3	--	
		05/16/05	Not Sampled - Well Reduction Program							
		09/12/05	Not Sampled - Well Reduction Program							
MW-14		02/18/92	ND	ND	ND	ND	ND	--	ND	2
		05/26/92	ND	ND	ND	ND	ND	--	--	
		07/30/92	ND	ND	ND	ND	0.9	--	--	
		10/08/92	ND	ND	ND	ND	ND	--	--	
	01/14/93	ND	1.3	ND	ND	ND	--	--		
	02/21/03	Not Sampled								
	03/16/93	Not Sampled								
	04/14/93	ND	ND	ND	ND	ND	--	--		
	05/10/93	Not Sampled								
	09/02/93	ND	ND	ND	ND	ND	--	--		
	06/29/94	ND	ND	ND	ND	ND	--	--		
	3	09/28/94	<50	<0.50	<0.50	<0.50	<1.0	--	--	
		03/31/95	59	<0.3	<0.3	<0.3	<0.6	--	--	
		06/06/95	Not Sampled - Well Reduction Program							
		09/05/95	Not Sampled - Well Reduction Program							
		10/26/95	Not Sampled - Well Reduction Program							
		01/30/96	<500	<0.5	<0.5	<0.5	<1.5	--	--	
		04/11/96	Not Sampled - Well Reduction Program							
		07/10/96	Not Sampled - Well Reduction Program							
		10/01/96	Not Sampled - Well Reduction Program							
		03/20/97 ^{NP}	<500	<0.5	<0.5	<0.5	<1.5	<10	--	
		06/06/97	Not Sampled - Well Reduction Program							
		09/16/97	Not Sampled - Well Reduction Program							
		12/10/97	Not Sampled - Well Reduction Program							
		03/23/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-14 cont'd	06/05/98	Not Sampled - Well Reduction Program							3
	09/14/98	Not Sampled - Well Reduction Program							
	11/23/98	Not Sampled - Well Reduction Program							
	03/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--	
	06/09/99	Not Sampled - Well Reduction Program							
	09/28/99	Not Sampled - Well Reduction Program							
	12/22/99	Not Sampled - Well Reduction Program							
	03/08/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<5.0 ¹	--	
	05/10/00	Not Sampled - Well Reduction Program							
	08/22/00	Not Sampled - Well Reduction Program							
	11/14/00	Not Sampled - Well Reduction Program							
	02/06/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	4
	05/08/01	Not Sampled - Well Reduction Program							
	07/16/01	Not Sampled - Well Reduction Program							
	10/09/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	01/28/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	04/17/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	07/09/02	Not Sampled - Well Reduction Program							
	10/21/02	Not Sampled - Well Reduction Program							
	02/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	05/08/03	Not Sampled - Well Reduction Program							
	07/25/03	Not Sampled - Well Reduction Program							
	11/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	2.0	--	5
	06/21/04	Not Sampled - Well Reduction Program							
	09/13/04	Not Sampled - Well Reduction Program							
	12/20/04	Not Sampled - Well Reduction Program							
	03/07/05	<100	<0.50	<2.0	<0.50	<1.0	<1.0	--	
	05/16/05	Not Sampled - Well Reduction Program							
09/13/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0	--		
MW-15	02/18/92	8,000	1,800	5,400	850	5,000	--	ND	2
	05/26/92	2,649	2,091	2,736	876	3,476	--	--	
	07/30/92	Well Not Sampled							
	10/08/92	Well Not Sampled							
	01/14/93	Well Not Sampled							
	02/20/93	Well Not Sampled							
	03/16/93	Well Not Sampled							
	04/14/93	Well Not Sampled							
	05/10/93	Well Not Sampled							
	09/02/93	120,000	10,000	6,200	1,700	5,300	--	--	
	06/29/94	53,000	8,000	180	1,400	600	--	--	
	09/28/94	13,000	5,500	11,000	7,000	24,000	--	--	
	03/31/95	65,000	10,000	360	1,100	680	--	--	
	06/06/95	Not Sampled - Well Reduction Program							
	09/05/95	Not Sampled - Well Reduction Program							
	10/26/95	29,000	12,000	420	1,400	480	--	--	
	01/30/96	76,000	6,200	92	290	120	--	--	
	04/11/96	24,000	11,000	96	510	190	--	--	
	07/10/96	Not Sampled - Well Reduction Program							
	10/01/96	Not Sampled - Well Reduction Program							

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source	
MW-15 cont'd	03/20/97 ^{NP}	25,000	12,000	740	1,100	1,400	210,000 ¹	--	3	
	06/06/97	Not Sampled - Well Reduction Program								
	09/16/97	Not Sampled - Well Reduction Program								
	12/10/97	Not Sampled - Well Reduction Program								
	03/23/98 ^{NP}	6200	2500	150	480	260	32,000	--		
	06/05/98	Not Sampled - Well Reduction Program								
	09/14/98	Not Sampled - Well Reduction Program								
	11/23/98	Not Sampled - Well Reduction Program								
	03/22/99 ^{NP}	22000	7600	<60	760	160	180,000	--		
	06/09/99	Not Sampled - Well Reduction Program								
	09/28/99	2,7000	11,000	120	1,400	1,200	52,000 ¹	--		
	12/22/99 ^{NP}	12,000	4,100	<60	440	440	32,000	--		
	03/08/00 ^{NP}	<500	72	<1.0	27	3.8	200	--		
	05/10/00 ^{NP}	23,000	7,700	<100	780	<300	45,000	--		
	08/22/00 ^{NP}	23,000	14,000	<130	2,000	<380	46,000	--		
	11/14/00 ^{NP}	10,000	6,900	350	1,000	420	18,000	--	4	
	02/06/01 ^{NP}	3,100	1,100	<50	190	<150	15,000	--		
	05/08/01 ^{NP}	19,000	10,000	82	1,700	300	20,000	--		
	07/16/01 ^{NP}	20,000	11,000	71	1,900	390	18,000	--		
	10/09/01 ^{NP}	24,000	12,000	<250	1,800	<750	17,000	--		
	01/28/02 ^{NP}	4,000	1,300	<62	390	<190	24,000	--		
	04/17/02 ^{NP}	1,700	540	<100	180	<300	7,400	--		
	07/09/02	Not Sampled - Well Reduction Program								
	10/21/02	Not Sampled - Well Not Accessible								
	02/21/03	Not Sampled - Well Not Accessible								
	05/08/03	Not Sampled - Well Not Accessible								
	07/25/03	Not Sampled - Well Not Accessible								
	11/21/03	Not Sampled - LPH Sheen								
	02/25/04	2,400	910	<200	<200	<600	51,000	--		5
	06/21/04	Not Sampled - Well Reduction Program								
	09/13/04	Not Sampled - Well Reduction Program								
	12/20/04	Not Sampled - Well Reduction Program								
	03/08/05	Not Analyzed - Suspect Sample								
	05/16/05	Not Sampled - Well Reduction Program								
	09/13/05	9,200	1,700	<100	170	<200	16,000	--		
MW-16	02/18/92	ND	ND	0.6	ND	ND	--	ND	2	
	05/26/92	ND	12.5	ND	ND	ND	--	--		
	07/30/92	ND	0.6	0.9	ND	ND	--	--		
	10/08/92	ND	35.8	2.5	ND	ND	--	--		
	01/14/93	ND	51.6	1.2	ND	ND	--	--		
	02/20/93	Not Sampled								
	03/16/93	Not Sampled								
	04/14/93	1000	22	ND	ND	ND	--	--		
	05/10/93	Not Sampled								
	09/02/93	7,100	160	ND	ND	ND	--	--		
	06/29/94	13,000	2,800	1,600	270	830	--	--	3	
	09/28/94	38,000	5,900	<50	200	130	--	--		
	03/31/95	39,000	5,500	<30	440	120	--	--		
	06/06/95	Not Sampled - Well Reduction Program								
	09/05/95	Not Sampled - Well Reduction Program								
	10/26/95	Not Sampled - Well Reduction Program								

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-16 cont'd	01/30/96	25,000	1,700	5.9	110	5.6	--	--	3
	04/11/96	Not Sampled - Well Reduction Program							
	07/10/96	Not Sampled - Well Reduction Program							
	10/01/96	Not Sampled - Well Reduction Program							
	03/20/97 ^{NP}	<500	24	<0.5	1.3	<1.5	45,000 ¹	--	
	06/06/97	Not Sampled - Well Reduction Program							
	09/16/97	Not Sampled - Well Reduction Program							
	12/10/97 ^{NP}	1,100	320	<12	<12	<24	19,000	--	
	03/23/98 ^{NP}	<500	110	<0.50	1.5	2.8	19,000	--	
	06/05/98 ^{NP}	<500	20	<0.50	<0.50	<1.5	19,000	--	
	09/14/98 ^{NP}	170	14	<0.50	<0.50	<1.5	23,000	--	
	11/23/98 ^{NP}	<500	<5	<5	<5	<10	20,000	--	
	03/22/99 ^{NP}	<500	1.2	1.1	<0.50	<1.5	20,000	--	
	06/09/99 ^{NP}	<500	8.9	<0.50	<0.50	<1.5	12,000 ¹	--	
	09/28/99 ^{NP}	<500	9.3	<1.2	<1.2	<2.4	10,000	--	
	12/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	9,100	--	
	03/08/00 ^{NP}	2,600	2.3	<1.5	2.1	5.2	11,000	--	
	05/10/00 ^{NP}	4,600	26	<10	<10	<30	14,000	--	
	08/22/00 ^{NP}	<500	<40	<40	<40	<120	9,000	--	
	11/14/00 ^{NP}	<1,000	<40	<40	<40	<120	9,400	--	
	02/06/01 ^{NP}	<1,000	<40	<40	<40	<120	13,000	--	4
	05/08/01 ^{NP}	<500	<25	<25	<25	<75	10,000	--	
	07/16/01 ^{NP}	<500	<40	<40	<40	<120	9,300	--	
	10/09/01 ^{NP}	<500	<100	<100	<100	<300	9,000	--	
	01/28/02 ^{NP}	<500	<40	<40	<40	<120	7,000	--	
	04/17/02 ^{NP}	<500	<50	<50	<50	<150	5,000	--	
	07/09/02	Not Sampled - Well Reduction Program							
	10/21/02 ^{NP}	<500	<50	<50	<50	<150	7,200	--	
	02/21/03 ^{NP}	<500	<50	<50	<50	<150	5,600	--	
	05/08/03	Not Sampled - Well Reduction Program							
	07/25/03	Not Sampled - Well Reduction Program							
	11/21/03 ^{NP}	<500	<25	<25	<25	<75	6,300	--	
	11/21/03	<500	<50	<50	<50	<150	6,000	--	
	02/25/04	<500	<50	<50	<50	<150	5,900	--	
	06/21/04	Not Sampled - Well Reduction Program							5
	09/13/04	Not Sampled - Well Reduction Program							
12/20/04	Not Sampled - Well Reduction Program								
03/08/05	Not Analyzed - Suspect Sample								
05/16/05	Not Sampled - Well Reduction Program								
09/12/05	Not Sampled - Well Reduction Program								
MW-17	07/30/92	1,570	169.5	253.3	54.1	321.3	--	ND	2
	10/08/92	20,834	3,083.5	3,086.8	785.2	2,623.5	--	--	
	01/14/93	Well Not Sampled							
	02/20/93	Well Not Sampled							
	03/16/93	Well Not Sampled							
	04/14/93	Well Not Sampled							
	05/10/93	Well Not Sampled							3
	09/02/93	7,600	1,200	1,200	160	810	--	--	
	06/29/94	13,000	2,800	1,600	270	830	--	--	
	09/28/94	13,000	1,900	1,700	260	1,000	--	--	
	03/31/95	7,700	1,600	120	210	170	--	--	

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-17 Cont'd	06/06/95	Not Sampled - Well Reduction Program							3
	09/05/95	Not Sampled - Well Reduction Program							
	10/26/95	Not Sampled - Well Reduction Program							
	01/30/96	6,900	280	42	97	78	--	--	
	04/11/96	Not Sampled - Well Reduction Program							
	07/10/96	Not Sampled - Well Reduction Program							
	10/01/96	Not Sampled - Well Reduction Program							
	03/20/97 ^{NP}	16,000	7400	170	1100	270	57,000 ¹	--	
	06/06/97	Not Sampled - Well Reduction Program							
	09/16/97	Not Sampled - Well Reduction Program							
	12/10/97	Not Sampled - Well Reduction Program							
	03/23/98 ^{NP}	44,000	15,000	1,200	2,400	8,400	58,000	--	
	06/05/98	Not Sampled - Well Reduction Program							
	09/14/98	Not Sampled - Well Reduction Program							
	11/23/98	Not Sampled - Well Reduction Program							
	03/22/99 ^{NP}	46,000	12,000	<120	1,600	3,900	27,000	--	
	06/09/99	Not Sampled - Well Reduction Program							
	09/28/99 ^{NP}	36,000	10,000	160	1,800	2,600	4,300	--	
	12/22/99 ^{NP}	27,000	12,000	<120	2,200	<240	7,700 ¹	--	
	03/08/00 ^{NP}	36,000	13,000	390	2,700	2,200	7,800	--	
	05/10/00 ^{NP}	23,000	12,000	<130	1,900	1,200	5,700	--	
	08/22/00 ^{NP}	14,000	6,100	<25	1,100	86	2,400	--	
	11/14/00 ^{NP}	20,000	1,900	26	68	130	4,100	--	
	02/06/01 ^{NP}	28,000	12,000	<40	2,500	<120	3,000	--	
	05/08/01 ^{NP}	14,000	8,000	43	1,500	<75	1,400	--	
	07/16/01 ^{NP}	19,000	10,000	95	2,000	220	1,300	--	
	10/09/01 ^{NP}	15,000	8,400	<100	2,000	<300	380	--	
	01/28/02 ^{NP}	13,000	6,300	<40	1,500	<120	760	--	
	04/17/02 ^{NP}	7,900	4,100	<25	1,200	<75	520	--	
	07/09/02	Not Sampled - Well Reduction Program							
	10/21/02 ^{NP}	2,800	600	<5.0	610	<15	13	--	
	02/21/03 ^{NP}	3,900	860	<5.0	1200	<15	110	--	
	05/08/03	Not Sampled - Well Reduction Program							
	07/25/03 ^{NP}	700	1,600	16	1,100	46	56	--	
	11/21/03 ^{NP}	5,700	2,600	<20	1,200	<60	47	--	
	11/21/03	510	150	<5.0	80	<15	1,300	--	
	02/25/04	<500	21	<5.0	42	<15	620	--	
	06/21/04	Not Sampled - Well Reduction Program							
	09/13/04	Not Sampled - Well Reduction Program							
	12/20/04	Not Sampled - Well Reduction Program							
	03/08/05	160	4.7	<2.5	4.3	<5.0	220	--	
	05/16/05	Not Sampled - Well Reduction Program							
	09/13/05	790	130	3.1	70	27	150	--	
MW-18	07/30/92	ND	ND	2.4	ND	ND	--	--	
	10/08/92	ND	ND	ND	ND	ND	--	--	
	01/14/93	ND	4.6	1.4	ND	0.9	--	--	
	02/20/93	Not Sampled							
	03/16/93	Not Sampled							
	04/14/93	ND	ND	ND	ND	ND	--	--	
	05/10/93	Not Sampled							
	09/02/93	ND	0.79	ND	ND	ND	--	--	

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source	
MW-18 cont'd	06/29/94	Not Sampled							3	
	09/28/94	330	<0.50	<0.50	<0.50	<1.0	--	--		
	03/31/95	710	1.5	2.2	0.87	4.6	--	--		
	06/06/95	<500	<0.5	<0.5	<0.5	<1.5	--	--		
	09/05/95	1,100	<6.0	<6.0	<6.0	<12	--	--		
	10/26/95	<50	1.2	<0.5	<0.5	<1.5	--	--		
	01/30/96	<500	<0.5	<0.5	<0.5	<1.5	--	--		
	04/11/96	<500	<0.5	<0.5	<0.5	<1.5	--	--		
	07/10/96	110	43	<0.3	<0.3	<0.6	1,700	--		
	10/01/96	<500	<0.5	<0.5	<0.5	<1.5	5,500	--		
	03/20/97 ^{NP}	<500	<0.5	<0.5	<0.5	<1.5	1,600 ¹	--		
	06/06/97 ^{NP}	<500	<0.5	0.54	<0.5	<1.5	440	--		
	09/16/97 ^{NP}	<50	<0.50	<0.50	<0.50	<1.5	370	--		
	12/10/97 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	300	--		
	03/28/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<10	--		
	06/05/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	81	--		
	09/14/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	340	--		
	11/23/98 ^{NP}	<50	<0.5	<0.5	<0.5	<1.0	18	--		
	03/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	7,700	--		
	06/09/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	5,700 ¹	--		
	09/28/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	8,400	--		
	12/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	4,600	--		
	03/08/00 ^{NP}	550	<0.50	<0.50	<0.50	<1.5	6,800	--		
	05/10/00 ^{NP}	3,000	10	<10	<10	<30	11,000	--		
	08/22/00 ^{NP}	<500	<13	<13	<13	<38	7,700	--		
	11/14/00 ^{NP}	<500	<20	<20	<20	<60	7,300	--		
	02/06/01 ^{NP}	<500	<25	<25	<25	<75	5,700	--		
	05/08/01 ^{NP}	<500	<25	<25	<25	<75	8,600	--		
	07/16/01 ^{NP}	<500	<25	<25	<25	<75	8,300	--		
	10/09/01 ^{NP}	<500	<100	<100	<100	<300	5,600	--		
	01/28/02 ^{NP}	<500	<40	<40	<40	<120	5,600	--		
	04/17/02 ^{NP}	<500	<25	<25	<25	<75	6,500	--		
	07/09/02 ^{NP}	<500	<25	<25	<25	<75	7,800	--		
	10/21/02 ^{NP}	<500	<50	<50	<50	<150	9,100	--		
	02/21/03 ^{NP}	<500	<20	<20	<20	<60	6,000	--		
	05/08/03 ^{NP}	<500	<0.500	<0.500	<0.500	<1.50	3,840	--		
	07/25/03 ^{NP}	<500	<200	<200	<200	<600	73,000	--		
	11/21/03 ^{NP}	<500	<20	<20	<20	<60	2,800	--		
	11/21/03	<500	<25	<25	<25	<75	6,100	--		
	02/25/04	<500	<50	<50	<50	<150	9,100	--		
	06/21/04	<500	<50	<50	<50	<150	8,200	--		
	09/13/04	<500	<50	<50	<50	<150	6,100	--		
	12/20/04	1,300	<50	<50	<50	<50	2,900	--		
	03/07/05	<100	<1.2	<1.2	<1.2	<2.5	200	--		
	05/16/05	680	<50	<50	<50	<100	3,300	--		
	09/12/05	740	<25	<25	<25	<50	4,300	--		
MW-19A*	07/30/92	ND	ND	ND	ND	1.3	--	ND	2	
	10/08/92	ND	ND	ND	ND	ND	--	--		
	01/14/93	ND	0.8	1.5	ND	0.8	--	--		
	02/20/93	Not Sampled								
	03/16/93	Not Sampled								

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-19A* cont'd	04/14/93	ND	ND	ND	ND	ND	--	--	2
	05/10/93	Not Sampled							
	09/02/93	ND	ND	ND	ND	ND	--	--	3
	06/29/94	1,700	ND	ND	ND	ND	--	--	
	09/28/94	1,800	<2.5	<2.5	<2.5	<5.0	--	--	
	03/31/95	4,300	8.9	2.8	2.3	7.7	--	--	4
	06/06/95	Not Sampled - Well Reduction Program							
	09/05/95	4,600	<12	<12	<12	<24	--	--	
	10/26/95	<50	<0.5	<0.5	<0.5	<1.5	--	--	
	01/30/96	4,200	<0.5	<0.5	<0.5	<1.5	--	--	
	04/11/96	<500	51	1	<0.5	1.8	--	--	
	07/10/96	110	43	<0.3	<0.3	<0.6	7,400	--	
	10/01/96	<500	<0.5	<0.5	<0.5	<1.5	12,000	--	
	3/20/397 ^{NP}	<500	<0.5	<0.5	<0.5	<1.5	34	--	
	06/06/97 ^{NP}	<500	13	<0.5	<0.5	<1.5	2,500 ¹	--	
	09/16/97 ^{NP}	<50	<0.50	<0.50	<0.50	<1.5	35	--	
	12/10/97 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	1,100	--	
	03/23/98 ^{NP}	<500	0.5	<0.50	<0.50	<1.5	760	--	
	06/05/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	95	--	
	09/14/98 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	1,900	--	
	11/23/98 ^{NP}	<50	<0.50	<0.50	<0.50	<1.0	110	--	
	03/22/99 ^{NP}	<500	2.2	<0.50	<0.50	<1.5	320	--	
	06/09/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.0	1,200	--	
	09/28/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	720 ¹	--	
	12/22/99 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	340	--	
	03/08/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	280	--	
	05/10/00 ^{NP}	<500	1.3	<0.50	<0.50	<1.5	280	--	
	08/22/00 ^{NP}	<500	<1.3	<1.3	<1.3	<3.8	420	--	
	11/14/00 ^{NP}	<500	<1.3	<1.3	<1.3	<2.5	220	--	
	02/06/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	97	--	
	05/08/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	110	--	
	07/16/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	260	--	
	10/09/01 ^{NP}	<500	<5.0	<5.0	<5.0	<15	220	--	
	01/28/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	4.3	--	
	04/17/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	1.4	--	
	07/09/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	10/21/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	02/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	05/08/03 ^{NP}	<500	<0.500	<0.500	<0.500	<1.50	<1.00	--	
	07/25/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	1	--	
	11/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	1.8	--	
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	16	--	
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	10	--	
	06/21/04	<500	<0.50	<0.50	<0.50	<1.5	14	--	
	09/13/04	<500	<0.50	<0.50	<0.50	<1.5	6.3	--	
	12/20/04	<100	<1.0	<1.0	<1.0	<1.0	3.2	--	
	03/07/05	<100	<0.50	<0.50	<0.50	<1.0	8.6	--	
	05/16/05	<100	<0.50	<0.50	<0.50	<1.0	2.8	--	
	09/12/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0	--	
MW-19B*	06/29/94	70,000	8,300	14,000	3,400	17,000	--	--	3
	09/28/94	94,000	15,000	1,100	1,900	2,300	--	--	

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source	
MW-19B* cont'd	03/31/95	51,000	5,600	8,500	2,300	14,000	--	--	3	
	06/06/95	63,000	5,300	7,900	2,900	13,000	--	--		
	09/05/95	100,000	6,400	10,000	3,400	18,000	--	--		
	10/26/95	46,000	2,800	3,000	2,600	9,400	--	--		
	01/30/96	61,000	6,100	6,500	3,000	13,000	--	--		
	04/11/96	59,000	4,900	3,100	3,200	12,000	--	--		
	07/10/96	33,000	2,900	3,000	2,200	8,200	970	--		
	10/01/96	32,000	4,900	6,400	2,800	11,000	260	--		
	03/20/97 ^{NP}	11,000	1,100	1,100	610	3,500	<50 ¹	--		
	06/06/97 ^{NP}	18,000	1,500	2,500	1,000	4,700	130	--		
	09/16/97 ^{NP}	14,000	1,900	1,200	1,100	4,100	130	--		
	12/10/97 ^{NP}	24,000	2,300	1,500	1,400	5,500	<400	--		
	03/23/98 ^{NP}	24,000	1,800	1,800	1,200	4,700	180	--		
	06/05/98 ^{NP}	42,000	2,600	4,000	1,900	8,300	<1,000	--		
	09/14/98 ^{NP}	22,000	2,500	330	1,600	4,100	<1,000	--		
	11/23/98 ^{NP}	60,000	3,400	4,700	2,300	10,000	<250	--		
	03/22/99 ^{NP}	11,000	760	100	410	800	<400	--		
	06/09/99 ^{NP}	25,000	2,500	1,300	1,500	4,400	<1,000	--		
	09/28/99 ^{NP}	27,000	2,400	860	2,000	4,600	<500	--		
	12/22/99 ^{NP}	11,000	720	250	780	1,700	<1,000	--		
	03/08/00 ^{NP}	6,000	710	120	600	680	<5.0 ¹	--		
	05/10/00 ^{NP}	11,000	1,400	170	1,500	620	<8.0 ¹	--		
	08/22/00 ^{NP}	5,300	690	52	740	290	<5.0	--		
	11/14/00 ^{NP}	6,000	860	1,000	15	48	<5.0	--		
	02/06/01 ^{NP}	6,300	720	160	880	400	<5.0	--		
	05/08/01 ^{NP}	19,000	1,900	810	2,300	3,200	<13	--		
	07/16/01 ^{NP}	22,000	1,900	870	2,400	3,800	<100	--		
	10/09/01 ^{NP}	15,000	1,100	180	1,600	1,900	<80	--		
	01/28/02 ^{NP}	3,800	280	40	470	150	<4.0	--		
	04/17/02 ^{NP}	4,000	250	23	530	300	<5.0	--		
	07/09/02 ^{NP}	6,800	380	18	630	330	<5.0	--		
	10/21/02 ^{NP}	3,900	450	<5.0	1,100	19	<10	--		
	02/21/03 ^{NP}	1,400	77	<5.0	410	<15	<10	--		
05/08/03 ^{NP}	7,100	302	9.67	1,690	91.1	<1.00	--			
07/25/03 ^{NP}	3,200	180	<5.0	950	<15	12	--			
11/21/03 ^{NP}	4,600	150	<5.0	1,000	22	63	--			
11/21/03	6,800	190	160	1,400	550	290	--			
02/25/04	7,600	170	340	1,800	1,100	180	--			
06/21/04	7,100	75	110	1,100	440	29	--			
09/13/04	8,300	68	180	1,200	810	<20	--			
12/20/04	2,100	20	35	280	140	<5.0	--			
03/08/05	8,900	81	840	1,800	2,200	<25	--			
05/16/05	4,100	52	330	1,200	1,100	<25	--			
09/12/05	4,700	40	190	1,000	640	<17	--			
MW-20	06/29/94	62,000	5,700	14,000	3,000	16,000	--	--	3	
	09/28/94	52,000	5,000	3,700	2,700	12,000	--	--		
	03/31/95	14,000	2,800	950	2,300	6,300	--	--		
	06/06/95	Not Sampled - Well Reduction Program								
	09/05/95	Not Sampled - Well Reduction Program								
	10/26/95	Not Sampled - Well Reduction Program								
	01/30/96	21,000	1,000	1,100	1,600	3,800	--	--		

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-20 cont'd	04/11/96	Not Sampled - Well Reduction Program							3
	07/10/96	Not Sampled - Well Reduction Program							
	10/01/96	Not Sampled - Well Reduction Program							
	3/20/97 ^{NP}	12,000	930	190	1,700	1,000	38 ¹	--	
	06/06/97	Not Sampled - Well Reduction Program							
	09/16/97	Not Sampled - Well Reduction Program							
	12/10/97	Not Sampled - Well Reduction Program							
	03/23/98 ^{NP}	13,000	240	260	1,900	2,300	390	--	
	06/05/98	Not Sampled - Well Reduction Program							
	09/14/98	Not Sampled - Well Reduction Program							
	11/23/98	Not Sampled - Well Reduction Program							
	03/22/99 ^{NP}	10,000	68	97	810	410	<200	--	
	06/09/99	Not Sampled - Well Reduction Program							
	09/28/99	Not Sampled - Well Reduction Program							
	12/22/99 ^{NP}	2,700	43	17	380	85	<400	--	
	03/08/00 ^{NP}	5,700	110	94	1,300	400	<10 ¹	--	
	05/10/00 ^{NP}	2,100	76	8.6	600	<19	<2.0 ¹	--	
	08/22/00 ^{NP}	2,900	82	37	590	160	<5.0	--	
	11/14/00 ^{NP}	2,500	93	34	740	93	<5.0	--	
	02/06/01 ^{NP}	2,900	22	21	1,200	120	<10	--	
	05/08/01 ^{NP}	3,800	60	36	1,400	146	<10	--	
	07/16/01 ^{NP}	3,900	60	57	720	240	<10	--	
	10/09/01 ^{NP}	3,100	54	16	960	82	<20	--	
	01/28/02 ^{NP}	550	20	1.1	56	7.2	<1.0	--	
	04/17/02 ^{NP}	4,200	28	26	610	130	<1.0	--	
	07/09/02	Not Sampled - Well Reduction Program							
	10/21/02 ^{NP}	510	4.8	<0.5	14	<1.5	<1.0	--	
	02/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	05/08/03	Not Sampled - Well Reduction Program							
	07/25/03 ^{NP}	<500	1.3	<0.50	1.1	<1.5	<1.0	--	
	11/21/03 ^{NP}	<500	2.8	<0.50	5.2	<1.5	<1.0	--	
	11/21/03	<500	1.2	<0.50	0.83	<1.5	<1.0	--	
	02/25/04	<500	<0.50	<0.50	1.2	<1.5	<1.0	--	
	06/21/04	Not Sampled - Well Reduction Program							
	09/13/04	Not Sampled - Well Reduction Program							
	12/20/04	Not Sampled - Well Reduction Program							
	03/08/05	<100	<0.50	<0.50	13.0	5.4	<1.0	--	
	05/16/05	Not Sampled - Well Reduction Program							
	09/12/05	Not Sampled - Well Reduction Program							
MW-21	06/29/94	38,000	1,800	3,500	2,000	6,900	--	--	3
	09/28/94	20,000	1,600	2,800	840	4,300	--	--	
	03/31/95	17,000	1300	2000	1,600	4300	--	--	
	06/06/95	Not Sampled - Well Reduction Program							
	09/05/95	Not Sampled - Well Reduction Program							
	10/26/95	Not Sampled - Well Reduction Program							
	01/30/96	5,300	270	280	540	970	--	--	
	04/11/96	Not Sampled - Well Reduction Program							
	07/10/96	Not Sampled - Well Reduction Program							
	10/01/96	Not Sampled - Well Reduction Program							
	03/20/97 ^{NP}	7800	730	140	1300	840	<25 ¹	--	
	06/06/97	Not Sampled - Well Reduction Program							

TABLE 4A

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source	
MW-21 cont'd	09/16/97	Not Sampled - Well Reduction Program							4	
	12/10/97	Not Sampled - Well Reduction Program								
	03/23/98 ^{NP}	10,000	810	210	1,100	1,600	120	--		
	06/05/98	Not Sampled - Well Reduction Program								
	09/14/98	Not Sampled - Well Reduction Program								
	11/23/98	Not Sampled - Well Reduction Program								
	03/22/98 ^{NP}	41,000	600	5,800	1,800	11,000	<1,000	--		
	06/09/99	Not Sampled - Well Reduction Program								
	09/28/99 ^{NP}	12,000	430	300	1,300	2,300	<400	--		
	12/22/99 ^{NP}	6,800	150	200	530	1,100	<1,000	--		
	03/08/00 ^{NP}	5,800	310	160	1,100	360	<5.0 ¹	--		
	05/12/00 ^{NP}	28,000	780	1,800	2,900	6,100	<80	--		
	08/22/00 ^{NP}	30,000	600	990	2,700	8,000	<25	--		
	11/14/00 ^{NP}	19,000	300	100	2,200	2,900	<25	--		
	02/06/01 ^{NP}	5,400	160	170	1,100	300	<10	--		
	05/08/01 ^{NP}	3,000	66	<5.0	850	<15	<10	--		
	07/16/01 ^{NP}	3,900	130	32	1,500	71	<5.0	--		
	10/09/01 ^{NP}	10,000	120	35	2,300	1,100	<50	--		
	01/28/02 ^{NP}	2,200	19	18	510	38	<10	--		
	04/17/02 ^{NP}	6,300	69	100	1,300	460	<5.0	--		
	07/09/02	Not Sampled - Well Reduction Program								
	10/21/02 ^{NP}	3,700	50	7.8	1,200	<15	<10	--		
	02/21/03 ^{NP}	<500	20	<2.5	320	<7.5	<5.0	--		
	05/08/03	Not Sampled - Well Reduction Program								
	07/25/03 ^{NP}	1,700	40	<2.5	540	150	<5.0	--		
	11/21/03 ^{NP}	1,600	110	<5.0	550	30	<10	--		
	11/21/03	4,900	170	80	720	1,000	<10	--		
	02/25/04	6,000	240	160	1,000	1,800	<10	--		
	06/21/04	Not Sampled - Well Reduction Program							5	
	09/13/04	Not Sampled - Well Reduction Program								
	12/20/04	Not Sampled - Well Reduction Program								
	03/08/05	9,700	490	490	1,700	4,500	84	--		
	05/16/05	Not Sampled - Well Reduction Program								
	06/21/04	Not Sampled - Well Reduction Program								
	MW-22	07/25/00	<500	<1.0	<2.0	<2.0	<4.0	54	--	3
08/22/00 ^{NP}		<500	<0.50	<0.50	<0.50	<1.5	120	--	4	
11/14/00 ^{NP}		<500	<0.50	<0.50	<0.50	<1.5	100	--		
02/06/01 ^{NP}		<500	<0.50	<0.50	<0.50	<1.5	73	--		
05/08/01 ^{NP}		<500	<0.50	<0.50	<0.50	<1.5	54	--		
07/16/01 ^{NP}		<500	<0.50	<0.50	<0.50	<1.5	44	--		
10/09/01 ^{NP}		<500	<0.50	<0.50	<0.50	<1.5	22	--		
01/28/02 ^{NP}		<500	<0.50	<0.50	<0.50	<1.5	44	--		
04/17/02 ^{NP}		<500	<0.50	<0.50	<0.50	<1.5	21	--		
07/09/02 ^{NP}		<500	<0.50	<0.50	<0.50	<1.5	13	--		
10/21/02 ^{NP}		<500	<0.50	<0.50	<0.50	<1.50	17	--		
02/21/03 ^{NP}		<500	<0.50	<0.50	<0.50	<1.5	27	--		
05/08/03 ^{NP}		<500	<0.500	<0.500	<0.500	<1.50	7.90	--		
07/25/03 ^{NP}		<500	<0.50	<0.50	<0.50	<1.5	7.7	--		
11/21/03 ^{NP}		<500	<0.50	<0.50	<0.50	<1.5	8.9	--		
11/21/03		<500	<0.50	<0.50	<0.50	<1.5	33	--		
02/25/04		<500	<0.50	<0.50	<0.50	<1.5	29	--		5

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919
All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-22 cont'd	06/21/04	<500	<0.50	<0.50	<0.50	<1.5	47	--	5
	09/13/04	<500	<0.50	<0.50	<0.50	<1.5	72	--	
	12/20/04	<100	<1.0	<1.0	<1.0	<1.0	38	--	
	03/07/05	<100	<0.50	1.1	<0.50	<1.0	8.8	--	
	05/16/05	<100	<0.50	<0.50	<0.50	<1.0	8.0	--	
	09/12/05	<100	<0.50	<0.50	<0.50	<1.0	18	--	
MW-23	07/25/00	<500	<1.0	<2.0	<2.0	<4.0	1.0	--	3
	08/22/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	11/14/00 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	1.0	--	
	02/06/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	05/08/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	07/16/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	5
	10/09/01 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	01/28/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	04/17/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	07/09/02	Not Sampled - Well Reduction Program							
	10/21/02 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	02/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	05/08/03	Not Sampled - Well Reduction Program							
	07/25/03	Not Sampled - Well Reduction Program							
	11/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	06/21/04	Not Sampled - Well Reduction Program							
	09/13/04	Not Sampled - Well Reduction Program							
	12/20/04	Not Sampled - Well Reduction Program							
	03/07/05	<100	<0.50	<25	<0.50	<1.0	<1.0	--	
	05/16/05	Not Sampled - Well Reduction Program							
	09/12/05	Not Sampled - Well Reduction Program							
MW-24	11/21/03 ^{NP}	<500	<5.0	<5.0	<5.0	<15	790	--	
	11/21/03	<500	<2.5	<2.5	<2.5	<7.5	480	--	
	02/25/04	<500	<2.5	<2.5	<2.5	<7.5	430	--	
	06/21/04	<500	<2.5	<2.5	<2.5	<7.5	340	--	
	09/13/04	<500	<2.5	<2.5	<2.5	<7.5	450	--	
	12/20/04	<100	<2.5	<2.5	<2.5	<2.5	130	--	
	03/08/05	<100	<0.50	<0.50	<0.50	<1.0	69	--	
	05/16/05	<100	<0.50	<0.50	<0.50	<1.0	32	--	
	09/12/05	<100	<0.50	<0.50	<0.50	<1.0	27	--	
MW-25	11/21/03 ^{NP}	<500	<10	<10	<10	<30	2,400	--	
	11/21/03	<500	<10	<10	<10	<30	2,000	--	
	02/25/04	<500	<10	<10	<10	<30	2,200	--	
	06/21/04	Not Sampled - Inaccessible							
	09/12/04	<500	1.0	<1.0	<1.0	<3.0	140	--	
	12/20/04	<100	<1.0	<1.0	<1.0	<1.0	82	--	
	03/08/05	<100	<0.50	<0.50	<0.50	<1.0	72	--	
	05/16/05	<100	<0.50	<0.50	<0.50	<1.0	3.8	--	
	09/12/05	<100	<0.50	<0.50	<1.0	<1.0	1.9	--	

TABLE 4A
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE	Total Lead	Source
MW-26	11/21/03 ^{NP}	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	5
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	06/21/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	09/13/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0	--	
	12/20/04	<100	<1.0	<1.0	<1.0	<1.0	<1.0	--	
	03/07/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0	--	
	05/16/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0	--	
	09/12/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0	--	

Notes:

TPHg = Total petroleum hydrocarbons as gasoline (DHS Modified EPA Method 8015)

B = Benzene

T = Toluene

E = Ethylbenzene

X = Total Xylenes

BTEX = Analyzed by EPA Method 8021, before 08/01/00. Analyzed by EPA Method 8260B beginning 08/01/00.

MTBE = Methyl-tert-butyl ether analyzed by EPA Method 8021 before 08/01/00 unless otherwise noted. Beginning 08/01/00 MTBE analyzed by EPA Method 8260B

¹ = MTBE Analyzed by EPA Method 8260

< = Less than indicated laboratory reporting limit

-- = Sample not analyzed

^{NP} = Sample collected by no-purge sampling procedures

* MW-19 was renamed MW-19A after the installation of another well designated MW-19 (now MW-19B).

Sources:

1 Alton Geoscience, 1992, Second Quarter 1992 Status Report on Fluid-Level Monitoring and Ground Water Sampling at ARCO Station 1919, 660 Via de la Valle, Solana Beach, California (Unauthorized Release No. T1985; Control No.H05166-002), dated July 21, 1992.

2 Alton Geoscience, 1994, Third Quarter 1993 Ground Water Monitoring and Sampling Report, ARCO Station 1919, 660 Via de la Valle, Solana Beach, California (Unauthorized Release No. T1985; Control No. H05166-002), dated January 19, 1994.

3 SECOR International Incorporated, 2000, Site Assessment Report, ARCO Facility #1919, 660 Via de la Valle, Del Mar, CA, SAM Case # H05166, dated October 20, 2000.

4 SECOR International Incorporated, 2004, ARCO Groundwater Remediation Report [Fourth-2003], dated January 30, 2004.

5 SECOR International Incorporated, 2005, ARCO Groundwater Monitoring Report [Third-2005], dated October 15, 2005.

TABLE 4B

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL	Source
MW-1							1
MW-2							
MW-3							
MW-4							
MW-5							
MW-6	08/22/00						1
	11/14/00						
	02/06/01 ^{NP}	<130	<25	<25	<25	--	
	05/08/01						
	07/16/01						
	01/28/02 ^{NP}	<25	<5.0	<5.0	17	--	
	04/17/02 ^{NP}	<25	<5.0	<5.0	24	--	
	07/09/02						
	10/21/02 ^{NP}	<500	<50	<50	<50	--	
	02/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	
	05/08/03						
	07/25/03 ^{NP}	<50	<5.0	<5.0	16	<150	
	11/21/03 ^{NP}	<50	<5.0	<5.0	11	<150	
	11/21/03	66	<5.0	<5.0	8.1	<150	
	02/25/04	<50	<5.0	<5.0	<5.0	<150	
	06/21/04						2
	09/13/04						
	12/20/04						
	03/08/05	<25	<2.0	<2.0	<2.0	<500	
	05/16/05						
	09/12/05						1
MW-7							
MW-8							
MW-10	08/22/00						
	11/14/00						
	02/06/01 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	05/08/01						
	07/16/01						
	10/09/01						
	01/28/02 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	04/17/02 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	07/09/02						
	10/21/02 ^{NP}	<50	<5.0	<5.0	<5.0	--	
	02/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	
	05/08/03						
	07/25/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	
	11/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	
	11/21/03	<50	<5.0	<5.0	<5.0	<150	
	02/25/04	<50	<5.0	<5.0	<5.0	<150	
	06/21/04						2
	09/13/04						
	12/20/04						
	03/08/05	<25	<2.0	<2.0	<2.0	<500	
	05/16/05						
	09/12/05						

TABLE 4B

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL	Source	
MW-11	08/22/00 ^{NP}	<50	<5.0	<5.0	<5.0	--	1	
	11/14/00 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	02/06/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	05/08/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	07/16/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	10/09/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	01/28/02 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	07/09/02	Not Sampled - Well Reduction Program						
	10/21/02 ^{NP}	<50	<5.0	<5.0	<5.0	--		
	02/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	1	
	05/08/03	Not Sampled - Well Reduction Program						
	07/25/03	<50	<0.50	<0.50	<0.50	<150		
	11/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150		
	11/21/03	<50	<5.0	<5.0	<5.0	<150		
	02/25/04	<50	<5.0	<5.0	<5.0	<150	2	
	06/21/04	Not Sampled - Well Reduction Program						
	09/13/04	Not Sampled - Well Reduction Program						
	12/20/04	Not Sampled - Well Reduction Program						
	03/08/05	<25	<2.0	<2.0	<2.0	<500		
	05/16/05	Not Sampled - Well Reduction Program						
	09/12/05	Not Sampled - Well Reduction Program						
MW-12	Well Destroyed 10/93						1	
MW-13	08/22/00 ^{NP}	<50	<5.0	<5.0	<5.0	--		
	11/14/00 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	02/06/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	05/08/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	07/16/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	10/09/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	01/28/02 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	04/17/02 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	07/09/02	Not Sampled - Well Reduction Program						
	10/21/02 ^{NP}	<50	<5.0	<5.0	<5.0	--		
	02/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150		
	05/08/03	Not Sampled - Well Reduction Program						
	07/25/03	Not Sampled - Well Reduction Program						
	11/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150		
	11/21/03	<50	<5.0	<5.0	<5.0	<150		
	02/25/04	<50	<5.0	<5.0	<5.0	<150		2
	06/21/04	Not Sampled - Well Reduction Program						
	09/13/04	Not Sampled - Well Reduction Program						
	12/20/04	Not Sampled - Well Reduction Program						
	03/08/05	<25	<2.0	<2.0	<2.0	<500		
05/16/05	Not Sampled - Well Reduction Program							
09/12/05	Not Sampled - Well Reduction Program							
MW-14	08/22/00	Not Sampled - Well Reduction Program					1	
	11/14/00	Not Sampled - Well Reduction Program						
	02/06/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	05/08/01	Not Sampled - Well Reduction Program						
	07/16/01	--						
	10/09/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		

TABLE 4B

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL	Source
MW-14 cont'd	01/28/02 ^{NP}	<25	<5.0	<5.0	<5.0	--	1
	04/17/02 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02	Not Sampled					
	02/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03	Not Sampled - Well Reduction Program					
	11/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	
	11/21/03	<50	<5.0	<5.0	<5.0	<150	
	02/25/04	<50	<5.0	<5.0	<5.0	<150	
	06/21/04	Not Sampled - Well Reduction Program					2
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
	03/07/05	<25	<2.0	2.0	<2.0	<500	
	05/16/05	Not Sampled - Well Reduction Program					
	09/13/05	<25	<2.0	<2.0	<2.0	<500	
MW-15	08/22/00 ^{NP}	<13,000	<1,300	<1,300	<1,300	--	1
	11/14/00 ^{NP}	8,500	<500	<500	<500	--	
	02/06/01 ^{NP}	4,400	<500	<500	<500	--	
	05/08/01 ^{NP}	16,000	<630	<630	<630	--	
	07/16/01 ^{NP}	8,100	<400	<400	<400	--	
	10/09/01 ^{NP}	<12,000	<2,500	<2,500	<2,500	--	
	01/28/02 ^{NP}	3,600	<620	<620	<620	--	
	04/17/02 ^{NP}	<5,000	<1,000	<1,000	<1,000	--	
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02	Not Sampled - Well Reduction Program					
	02/21/03	Not Sampled - Not Accessible					
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03	Not Sampled - Well Reduction Program					
	11/21/03	Not Sampled - LPH Sheen					
	02/25/04	51,000	<2,000	<2,000	<2,000	<60,000	2
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
	03/08/05	Not Analyzed - Suspect Sample					
	05/16/05	Not Sampled - Well Reduction Program					
09/13/05	63,000	<400	<400	<400	<100,000		
MW-16	08/22/00 ^{NP}	<4,000	<400	<400	<400	--	
	11/14/00 ^{NP}	<2,000	<40	<40	<40	--	
	02/06/01 ^{NP}	4,200	<400	<400	<400	--	
	05/08/01 ^{NP}	2,900	<250	<250	<250	--	
	07/16/01 ^{NP}	<2000	<400	<400	<400	--	
	10/09/01 ^{NP}	<5,000	<1,000	<1,000	<1,000	--	
	01/28/02 ^{NP}	<2,000	<400	<400	<400	--	
	04/17/02 ^{NP}	<2,500	<500	<500	<500	--	
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02 ^{NP}	<5,000	<500	<500	<500	--	
	02/21/03 ^{NP}	<5,000	<500	<500	<500	<15,000	
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03	Not Sampled - Well Reduction Program					

TABLE 4B

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL	Source
MW-16 cont'd	11/21/03 ^{NP}	<2,500	<250	<250	<250	<7,500	1
	11/21/03	<5,000	<500	<500	<500	<15,000	
	02/25/04	<5,000	<500	<500	<500	<15,000	
	06/21/04	Not Sampled - Well Reduction Program					2
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
	03/08/05	Not Analyzed - Suspect Sample					
	05/16/05	Not Sampled - Well Reduction Program					
	09/12/05	Not Sampled - Well Reduction Program					
MW-17	08/22/00 ^{NP}	<2,500	<250	<250	<250	--	1
	11/14/00 ^{NP}	1,300	<250	<250	<250	--	
	02/06/01 ^{NP}	<2,000	<400	<400	<400	--	
	05/08/01 ^{NP}	<1300	<250	<250	<250	--	
	07/16/01 ^{NP}	360	<50	<50	78	--	
	10/09/01 ^{NP}	<5,000	<1,000	<1,000	<1,000	--	
	01/28/02 ^{NP}	<2,000	<400	<400	<400	--	
	04/17/02 ^{NP}	<1,200	<250	<250	<250	--	
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02 ^{NP}	<500	<50	<50	<50	--	
	02/21/03 ^{NP}	<500	<50	<50	<50	<1,500	
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03 ^{NP}	<500	<50	<50	<50	<1,500	
	11/21/03 ^{NP}	<2,000	<200	<200	<200	<6,000	
	11/21/03	<500	<50	<50	<50	<1,500	
	02/25/04	<500	<50	<50	<50	<1,500	
	06/21/04	Not Sampled - Well Reduction Program					2
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
	03/08/05	250	<10	<10	<10	<2,500	
	05/16/05	Not Sampled - Well Reduction Program					
	09/13/05	360	<5.0	<5.0	<5.0	<1,200	
MW-18	08/22/00 ^{NP}	<1,300	<130	<130	<130	--	
	11/14/00 ^{NP}	1,200	<40	<40	<40	--	
	02/06/01 ^{NP}	1,400	<250	<250	<250	--	
	05/08/01 ^{NP}	2,700	<250	<250	<250	--	
	07/16/01 ^{NP}	<1200	<250	<250	<250	--	
	10/09/01 ^{NP}	<5,000	<1,000	<1,000	<1,000	--	
	01/28/02 ^{NP}	<2,000	<400	<400	<400	--	
	04/17/02 ^{NP}	<1,200	<250	<250	<250	--	
	07/09/02 ^{NP}	1,700	<250	<250	<250	--	
	10/21/02 ^{NP}	<5,000	<500	<500	<500	--	
	02/21/03 ^{NP}	<2,000	<200	<200	<200	<6,000	
	05/08/03 ^{NP}	78.7	<1.00	<1.00	15.6	<50.0	
	07/25/03 ^{NP}	<20,000	<2,000	<2,000	<2,000	<60,000	
	11/21/03 ^{NP}	<2,000	<200	<200	<200	<6,000	
	11/21/03	<2,500	<250	<250	<250	<7,500	
	02/25/04	<5,000	<500	<500	<500	<15,000	2
	06/21/04	<5,000	<500	<500	<500	<15,000	
	09/13/04	<5,000	<500	<500	<500	<15,000	
	12/20/04	2,300	<100	<100	<100	<25,000	

TABLE 4B

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL	Source
MW-18 cont'd	03/07/05	1,800	<5.0	<5.0	<5.0	<1,200	2
	05/16/05	<2,500	<200	<200	<200	<50,000	
	09/12/05	3,000	<100	<100	<100	<25,000	
MW-19A	08/22/00 ^{NP}	<130	<13	<13	<13	--	1
	11/14/00 ^{NP}	<63	<13	<13	<13	--	
	02/06/01 ^{NP}	30	<5.0	<5.0	<5.0	--	
	05/08/01 ^{NP}	41	<5.0	<5.0	<5.0	--	
	07/16/01 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	10/09/01 ^{NP}	<250	<50	<50	<50	--	
	01/28/02 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	04/17/02 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	07/09/02 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	10/21/02 ^{NP}	<50	<5.0	<5.0	<5.0	--	
	02/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	
	05/08/03 ^{NP}	<25.0	<1.00	<1.00	<1.00	<50.0	
	07/25/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	
	11/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	
	11/21/03	<50	<5.0	<5.0	<5.0	<150	
	02/25/04	<50	<5.0	<5.0	<5.0	<150	2
	06/21/04	<50	<5.0	<5.0	<5.0	<150	
	09/13/04	<50	<5.0	<5.0	<5.0	<150	
	12/20/04	<25	<2.0	<2.0	<2.0	<500	
	03/07/05	<25	<2.0	<2.0	<2.0	<500	
	05/16/05	<25	<2.0	<2.0	<2.0	<500	
	09/12/05	<25	<2.0	<2.0	<2.0	<500	
MW-19B	08/22/00 ^{NP}	<250	<25	<25	<25	--	1
	11/14/00 ^{NP}	<130	<25	<25	<25	--	
	02/06/01 ^{NP}	<130	<25	<25	<25	--	
	05/08/01 ^{NP}	<310	<63	<63	<63	--	
	07/16/01 ^{NP}	<2,500	<500	<500	<500	--	
	10/09/01 ^{NP}	<2,000	<400	<400	<400	--	
	01/28/02 ^{NP}	<100	<20	<20	<20	--	
	04/17/02 ^{NP}	<120	<25	<25	<25	--	
	07/09/02 ^{NP}	<120	<25	<25	<25	--	
	10/21/02 ^{NP}	<500	<50	<50	<50	--	
	02/21/03 ^{NP}	<500	<50	<50	<50	<1,500	
	05/08/03 ^{NP}	<25.0	<1.00	<1.00	<1.00	<50.0	
	07/25/03 ^{NP}	<500	<50	<50	<50	<1,500	
	11/21/03 ^{NP}	<500	<50	<50	<50	<1,500	
	11/21/03	<1,000	<100	<100	<100	<3,000	2
	02/25/04	<1,000	<100	<100	<100	<3,000	
	06/21/04	<1,000	<100	<100	<100	<3,000	
	09/13/04	<1,000	<100	<100	<100	<3,000	
	12/20/04	<120	<10	<10	<10	<2,500	
	03/08/05	<620	<50	<50	<50	<12,000	
	05/16/05	<620	<50	<50	<50	<12,000	
	09/12/05	<420	<33	<33	<33	<8,300	1
MW-20	08/22/00 ^{NP}	<250	<25	<25	<25	--	
	11/14/00 ^{NP}	<130	<25	<25	<25	--	
	02/06/01 ^{NP}	<250	<50	<50	<50	--	

TABLE 4B

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL	Source
MW-20 cont'd	05/08/01 ^{NP}	<250	<50	<50	<50	--	1
	07/16/01 ^{NP}	<250	<50	<50	<50	--	
	10/09/01 ^{NP}	<500	<100	<100	<100	--	
	01/28/02 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	04/17/02 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	07/09/02						
	10/21/02 ^{NP}	<50	<5.0	<5.0	<5.0	--	
	02/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	
	11/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	
	11/21/03	<50	<5.0	<5.0	<5.0	<150	
	02/25/04	<50	<5.0	<5.0	<5.0	<150	
	06/21/04	Not Sampled - Well Reduction Program					2
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
	03/08/05	<25	<2.0	<2.0	<2.0	<500	
	05/16/05	Not Sampled - Well Reduction Program					
	09/12/05	Not Sampled - Well Reduction Program					
MW-21	08/22/00 ^{NP}	<1,300	<130	<130	<130	--	1
	11/14/00 ^{NP}	<630	<130	<130	<130	--	
	02/06/01 ^{NP}	<250	<50	<50	<50	--	
	05/08/01 ^{NP}	<250	<50	<50	<50	--	
	07/16/01 ^{NP}	<120	<25	<25	<25	--	
	10/09/01 ^{NP}	<1,200	<250	<250	<250	--	
	01/28/02 ^{NP}	<250	<50	<50	<50	--	
	04/17/02 ^{NP}	<120	<25	<25	<25	--	
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02 ^{NP}	<500	<50	<50	<50	--	
	02/21/03 ^{NP}	<250	<25	<25	<25	<750	
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03 ^{NP}	<250	<25	<25	<25	<750	
	11/21/03 ^{NP}	<500	<50	<50	<50	<1,500	
	11/21/03	<500	<50	<50	<50	<1,500	
	02/25/04	<500	<50	<50	<50	<1,500	2
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
	03/08/05	<620	<50	<50	<50	<12,000	
	05/16/05	Not Sampled - Well Reduction Program					
	09/12/05	Not Sampled - Well Reduction Program					
MW-22	08/22/00 ^{NP}	<50	<5.0	<5.0	<5.0	--	1
	11/14/00 ^{NP}	27	<5.0	<5.0	<5.0	--	
	02/06/01 ^{NP}	26	<5.0	<5.0	<5.0	--	
	05/08/01 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	07/16/01 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	10/09/01 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	01/28/02 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	04/17/02 ^{NP}	<25	<5.0	<5.0	<5.0	--	
	07/09/02 ^{NP}	<25	<5.0	<5.0	<5.0	--	

TABLE 4B

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL	Source	
MW-22 cont'd	10/21/02 ^{NP}	<50	<5.0	<5.0	<5.0	--	1	
	02/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150		
	05/08/03 ^{NP}	<25.0	<1.00	<1.00	<1.00	<50.0		
	07/25/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150		
	11/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150		
	11/21/03	170	<5.0	<5.0	<5.0	<150		
	02/25/04	160	<5.0	<5.0	<5.0	<150	2	
	06/21/04	91	<5.0	<5.0	<5.0	<150		
	09/13/04	110	<5.0	<5.0	<5.0	<150		
	12/20/04	150	<2.0	<2.0	<2.0	<500		
	03/07/05	200	<2.0	<2.0	<2.0	<500		
	05/16/05	98	<2.0	<2.0	<2.0	<500		
	09/12/05	860	2.1	<2.0	<2.0	<500		
MW-23	08/22/00 ^{NP}	<50	<5.0	<5.0	<5.0	--	1	
	11/14/00 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	02/06/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	05/08/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	07/16/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	10/09/01 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	01/28/02 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	04/17/02 ^{NP}	<25	<5.0	<5.0	<5.0	--		
	07/09/02	Not Sampled - Well Reduction Program						
	10/21/02 ^{NP}	<50	<5.0	<5.0	<5.0	--		
	02/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150		
	05/08/03	Not Sampled - Well Reduction Program						
	07/25/03	Not Sampled - Well Reduction Program						
	11/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150		
	11/21/03	<50	<5.0	<5.0	<5.0	<150		
	02/25/04	<50	<5.0	<5.0	<5.0	<150		
	06/21/04	Not Sampled - Well Reduction Program						
	09/13/04	Not Sampled - Well Reduction Program						
	12/20/04	Not Sampled - Well Reduction Program						
	03/07/05	<25	<2.0	<2.0	<2.0	<500		
	05/16/05	Not Sampled - Well Reduction Program						
	09/12/05	Not Sampled - Well Reduction Program						
MW-24	11/21/03 ^{NP}	<500	<50	<50	<50	<1,500	1	
	11/21/03	<250	<25	<25	<25	<750	2	
	02/25/04	<250	<25	<25	<25	<750		
	06/21/04	<250	<25	<25	<25	<750		
	09/13/04	<250	<25	<25	<25	<750		
	12/20/04	<62	<5.0	<5.0	<5.0	<1,200		
	03/08/05	<25	<1.0	<2.0	<2.0	<500		
	05/16/05	88	<2.0	<2.0	<2.0	<500		
	09/12/05	120	<2.0	<2.0	<2.0	<500		

TABLE 4B

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL	Source
MW-25	11/21/03 ^{NP}	<1,000	<100	<100	<100	<3,000	1
	11/21/03	<1,000	<100	<100	<100	<3,000	
	02/25/04	<1,000	<100	<100	<100	<3,000	
	06/21/04	Not Sampled - Inaccessible					2
	09/13/04	310	<10	<10	<10	<300	
	12/20/04	460	<2.0	<2.0	<2.0	<500	
	03/08/05	330	<2.0	<2.0	<2.0	<500	
	05/16/05	480	<2.0	<2.0	<2.0	<500	
	09/12/05	210	<2.0	<2.0	<2.0	<500	
MW-26	11/21/03 ^{NP}	<50	<5.0	<5.0	<5.0	<150	1
	11/21/03	<50	<5.0	<5.0	<5.0	<150	
	02/25/04	<50	<5.0	<5.0	<5.0	<150	2
	06/21/04	<50	<5.0	<5.0	<5.0	<150	
	09/13/04	<50	<5.0	<5.0	<5.0	<150	
	12/20/04	<25	<2.0	<2.0	<2.0	<500	
	03/07/05	<25	<2.0	<2.0	<2.0	<500	
	05/16/05	<25	<2.0	<2.0	<2.0	<500	
	09/12/05	<25	<2.0	<2.0	<2.0	<500	

Notes:

TBA = Tert-butyl alcohol

DIPE = Di-isopropyl ether

ETBE = Ethyl tert-butyl ether

TAME = tert-Amyl methyl ether

< = Less than indicated laboratory reporting limit

Samples collected by no-purge procedures, and analyzed by EPA Method 8260B.

Sources:

1 SECOR International Incorporated, 2004, ARCO Groundwater Remediation Report [Fourth-2003], dated January 30, 2004.

2 SECOR International Incorporated, 2005, ARCO Groundwater Monitoring Report [Third-2005], dated October 15, 2005.

TABLE 5

SUMMARY OF BASELINE NATURAL ATTENUATION DATA
ARCO Facility #1919
660 Via de la Valle, Solana Beach, CA

Well Identificat ion	Petroleum Hydrocarbon Concentrations						Indicators of Natural Attenuation and General Groundwater Parameters												
	GRO	B	T	E	X	MTBE	DO	Nitrate	Fe III	Fe II	Sulfate	Sulfide	Methane	Ammonia	Total Alkalinity	ORP	S Cond	pH	Temp
	µg/L							µg/L								(mV)	(mS/cm)		(°C)
MW-14	<100	<0.50	<0.50	<0.50	<1.0	<1.0	0.63/2.92	911	4,160	<200	263,000	<100	<1.0	<100	196,000	-42/28.1	3.221/2.478	7.78/7.70	22.32/22.80
MW-15	9,200	1,700	<100	170	<200	16,000	0.27/0.78	<100	8,670	<200	641,000	5,530	3,500	740	1,410,000	-277.5/-118.3	4.391/4.783	8.69/8.71	25.03/25.23
MW-17	790	130	3.1	70	27	150	0.29/0.32	1,610	4,070	678	647,000	<100	410	361	534,000	-94.0/-14.7	2.254/6.781	7.93/7.21	23.25/22.85
MW-18	740	<25	<25	<25	<50	4,300	0.23/0.40	<100	29,400	<200	440,000	1,530	400	714	702,000	-16.4/-248.9	4.157/4.687	7.76/9.11	23.97/23.16
MW-19B	4,700	40	190	1,000	640	<17	0.24/0.86	111	5,570	258	181,000	114	690	644	716,000	-268.5/-117.8	2.400/2.344	8.84/8.64	24.06/24.30
MW-24	<100	<0.50	<0.50	<0.50	<1.0	27	0.43/0.34	<100	18,300	<200	692,000	154	340	1,970	699,000	-106.7/-196.6	5.260/9.020	7.66/8.66	27.23/24.90
MW-25	<100	<0.50	<0.50	<0.50	<1.0	1.9	0.27/0.70	<100	38,000	2860	509,000	158	330	5,190	685,000	-98.3/-87.8	4.465/5.570	7.76/7.58	26.09/24.66
MW-26	<100	<0.50	<0.50	<0.50	<1.0	<1.0	7.03/6.99	17,500	17,200	<200	500,000	159	2.4	<100	417,000	2.6/34.9	2.395/2.828	7.95/8.34	21.20/21.21

Notes:

Samples for GRO, BTEX, and MTBE were collected on September 12, 2005.

Samples for indicators of natural attenuation and general groundwater parameters were collected on September 12, 2005.

GRO = Gasoline range organics C6-C12 (DHS-Modified EPA Method 8015)

BTEX = Benzene, toluene, ethylbenzene, and total xylenes (EPA Method 8260B)

MTBE = Methyl tert-butyl ether (EPA Method 8260B)

DO = Dissolved oxygen (field measurement - pre & post purge)

Nitrate = Nitrate as nitrogen (EPA Method 300.0)

Fe III = Ferric iron (laboratory calculation)

Fe II = Ferrous iron (EPA Method 6010B-Diss)

Sulfate = Sulfate (EPA Method 300.0)

Sulfide = Sulfide (EPA Method 376.2)

Methane = Methane (EPA Method RSK-175 Mod)

Ammonia = Ammonia (EPA Method 350.3)

Alkalinity = Alkalinity as calcium carbonate (CaCO3) (EPA Method 310.1)

ORP = Oxidation-reduction potential (field measurement - pre & post purge)

S Cond = Specific conductivity (field measurement - pre & post purge)

pH = pH (field measurement - pre & post purge)

Temp = Temperature (field measurement - pre & post purge)

µg/L = Micrograms per Liter

mg/L = Milligrams per Liter

mV = Millivolts

mS/cm = millisiemens per centimeter

°C = Degrees celcius

< = Below indicated laboratory reporting limit

NS = Not sampled

NM = Not measured

TABLE 6

CONTAMINANT CHARACTERISTICS
ARCO Facility #1919

Compound/ Chemical	CAS #	Molecular Weight	Pure Phase Solubility ^(1,2) (mg/L)	log Koc ^(1,2) (log l/kg)	Vapor Pressure ^(1,2) (mm Hg)	Henry's Law Constant ^(1,2) (dimensionless)	Flash Point ^(1,2) (C)	Boiling Point ^(1,2) (C)	State of California Drinking Water MCL ⁽³⁾ (µg/L)	EPA Region 9 Preliminary Remediation Goals ⁽⁴⁾			
										Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (µg/m ³)	Tap Water (µg/L)
Gasoline	8006-61-9	~ 95	NA	NA	NA	NA	-45.6	32-225	NA	NA	NA	NA	NA
Benzene	71-43-2	78.11	1780	1.79	76 - 95.2	0.23	-11	80.1	0.001	0.64	1.4	0.25	0.35
methyl tert-butyl ether (MTBE)	1634-04-4	88.15	43,000-54,300	1.0-1.1	245-256	0.024	-28	55.2	0.013	32	70	7.4	11
tert-butanol (TBA)	75-65-0	74.12	Miscible	1.57	40-42	0.00048-0.00059	4	82.2	NA	NA	NA	NA	NA
tert-amyl methyl ether (TAME)	994-05-8	102.18	20,000	1.3-2.2	68.3	0.052	-11	85-86	NA	NA	NA	NA	NA

- Notes:
- µg/L micrograms per liter
 - mg/kg milligrams per kilogram
 - µg/m³ micrograms per cubic meter
 - C temperature in degrees Celsius
 - mm Hg pressure in millimeters of mercury
 - log l/kg a measure of the propensity of a compound to adsorb onto carbon in the soil matrix
 - Koc soil sorption coefficient
 - MCL California Maximum Contaminant Level in groundwater promulgated by California Environmental Protection Agency (CalEPA)
 - Pure Phase Solubility – The tendency of a chemical to dissolve in water, expressed as milligrams of a chemical that will dissolve in one liter of water.
 - Soil sorption coefficient (log Koc) - The tendency of a chemical to adsorb to soil, expressed as the ratio of a chemical that will adsorb onto organic carbon to the concentration of the chemical that dissolves in water;
 - Vapor pressure – The tendency of a chemical to migrate from a pure liquid phase to a gas phase, expressed as the pressure exerted by a chemical in the gas phase when it is in equilibrium with the liquid phase.
 - Henry's law constant – The tendency of a chemical to partition between the dissolved phase and the gas phase, expressed as the ratio of the equilibrium concentration of the chemical in the gas phase to the equilibrium concentration of the chemical in water.
 - (1) Guidelines for Investigation and Cleanup of MTBE and Other Ether-Based Oxygenates, 2000, California State Water Resources Control Board, Final Draft, 3/27/00
 - (2) San Diego County, Department of Environmental Health, Site Assessment and Mitigation Program, Vapor Risk Model, http://www.co.san-diego.ca.us/deh/lwq/sam/docs/vapor_risk-2000_rev-08-25-2003.xls
 - (3) A Compilation of Water Quality Goals, California Environmental Protection Agency, Regional Water Quality Control Board, Central Valley Region, August 2000
 - (4) U.S. Environmental Protection Agency, Region 9 Preliminary Remediation Goals, <http://www.epa.gov/region09/waste/sfund/prg/files/04prgtable.pdf> dated October 2004. These goals assume direct exposure to the contaminants.

Table 7
Remedial Technology Screening Matrix
ARCO Facility #1919
660 Via de la Valle.
Solana Beach, CA

	Technology	Description	Retained	Comments
1.	Pump-and-Treat	Conventional pump-and-treat methods involve pumping contaminated groundwater to the surface for treatment. Treated groundwater is then discharged or re-injected to the aquifer. Pump-and-treat systems are used primarily to accomplish hydraulic containment and/or to reduce the dissolved contaminant concentrations in the aquifer to meet cleanup objectives.	Yes	Applicable technology for groundwater plume migration control and dissolved-phase mass reduction.
2.	Excavation and Off-Site Disposal	Excavation removes contaminated material from a hazardous waste site using heavy construction equipment, such as backhoes, bulldozers, and front loaders. At certain sites, specially designed equipment may be used to prevent the spread of contaminants. The excavated material is commonly landfilled at an approved off-site disposal facility, but can also be remediated on site and reused.	Yes	Technically feasible method to address source mass in vadose zone and capillary fringe soils. Very difficult to implement since remaining source mass is at edge of site extending below busy intersection.
3.	Soil Vapor Extraction (1)	Soil vapor extraction (SVE), also known as "soil venting" or "vacuum extraction", is an <i>in situ</i> remedial technology that reduces concentrations of volatile constituents in petroleum products adsorbed to soils in the unsaturated (vadose) zone. In this technology, a vacuum is applied through wells near the source of contamination in the soil. Volatile constituents of the contaminant mass "evaporate" and the vapors are drawn toward the extraction wells. Extracted vapor is then treated as necessary before being released to the atmosphere. The increased air flow through the subsurface can also stimulate biodegradation of some of the contaminants, especially those that are less volatile. Wells may be either vertical or horizontal. In areas of high groundwater levels, water table depression pumps may be required to offset the effect of upwelling induced by the vacuum.	Yes	SVE has been used previously at site to address vadose zone impact and recover air sparging off gas.
4.	Dual-Phase Extraction (1)	Dual-phase extraction (DPE), also known as multi-phase extraction, vacuum-enhanced extraction, or sometimes bioslurping, is an in-situ technology that uses pumps to remove various combinations of contaminated groundwater, separate-phase petroleum product, and hydrocarbon vapor from the subsurface. Extracted liquids and vapor are treated and collected for disposal, or re-injected to the subsurface (where permissible under applicable state laws).	Yes	Technically feasible. Could address source mass and groundwater plume migration control.
5.	Air Sparging w/ Soil Vapor Extraction (1)	Air sparging is an <i>in situ</i> remedial technology that reduces concentrations of volatile constituents in petroleum products that are adsorbed to soils and dissolved in groundwater. This technology, which is also known as " <i>in situ</i> air stripping" and " <i>in situ</i> volatilization," involves the injection of contaminant-free air into the subsurface saturated zone, enabling a phase transfer of hydrocarbons from a dissolved state to a vapor phase. The air is then vented through the unsaturated zone. Air sparging is most often used together with soil vapor extraction (SVE), but it can also be used with other remedial technologies. When air sparging (AS) is combined with SVE, the SVE system creates a negative pressure in the unsaturated zone through a series of extraction wells to control the vapor plume migration. This combined system is called AS/SVE.	Yes	Has been used previously at the site.
6.	In-Situ Enhanced Bioremediation (1)	In-situ groundwater bioremediation is a technology that encourages growth and reproduction of indigenous microorganisms to enhance biodegradation of organic constituents in the saturated zone. In-situ groundwater bioremediation can effectively degrade organic constituents which are dissolved in groundwater and adsorbed onto the aquifer matrix.	Yes	Technically feasible.
7.	Low-Temperature Thermal Desorption (1)	Low-Temperature Thermal Desorption (LTTD), also known as low-temperature thermal volatilization, thermal stripping, and soil roasting, is an ex-situ remedial technology that uses heat to physically separate petroleum hydrocarbons from excavated soils. Thermal desorbers are designed to heat soils to temperatures sufficient to cause constituents to volatilize and desorb (physically separate) from the soil. Although they are not designed to decompose organic constituents, thermal desorbers can, depending upon the specific organics present and the temperature of the desorber system, cause some of the constituents to completely or partially decompose. The vaporized hydrocarbons are generally treated in a secondary treatment unit (e.g., an afterburner, catalytic oxidation chamber, condenser, or carbon adsorption unit) prior to discharge to the atmosphere. Afterburners and oxidizers destroy the organic constituents. Condensers and carbon adsorption units trap organic compounds for subsequent treatment or disposal. Some pre- and postprocessing of soil is necessary when using LTTD. Excavated soils are first screened to remove large (greater than 2 inches in diameter) objects. These may be sized (e.g., crushed or shredded) and then introduced back into the feed material. After leaving the desorber, soils are cooled, re-moistened to control dust, and stabilized (if necessary) to prepare them for disposal/reuse. Treated soil may be redeposited onsite, used as cover in landfills, or incorporated into asphalt.	No	Not enough room on site for this technology.

Table 8
Cost Estimate for Alternative 1 - Remediation by Natural Attenuation
ARCO Facility #1919

Capital Equipment and Construction

System Construction	\$0
System Start Up And Trouble Shooting	\$0
Total Cap/Const	\$0

Drilling Costs

Number of Wells	0
Drillers Cost for Dual SVE/AS (\$/ft)	NA
Depth per Well	0
Permits	\$0
Consultant Fees	\$0
Total Drilling Costs	\$0

Utility Costs

Total Motor HP	NA
Run Time (%)	NA
Power Cost (\$/kw-hr)	NA
Monthly Power Cost	NA
Monthly Utilities	\$0

O&M Costs

Expected Duration (months)	NA
Monthly O&M (excluding Utilities)	\$0.00
Total O&M Costs (incl Utilities)	\$0

System Decommissioning	\$0
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Total Cost	\$0
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Table 9
Cost Estimate for Alternative 2 - Air Sparging with Soil Vapor Extraction
ARCO Facility #1919

Capital Equipment and Construction

200 cfm Cat-Ox	existing
10-HP Sparge Blower	existing
Misc. Parts	\$10,000
AS/SVE System Expansion to 12 New Wells	\$125,000
System Start Up And Trouble Shooting	\$6,000
Total Cap/Const	\$141,000

Drilling Costs

Number of Dual AS/SVE Wells	12
Drillers Cost for Dual SVE/AS (\$/ft)	\$35
Depth per Well	20
Permits	\$1,974
Consultant Fees	\$7,500
Total Drilling Costs	\$17,874

Utility Costs

Total Motor HP	20
Run Time (%)	100%
Power Cost (\$/kw-hr)	\$0.15
Monthly Power Cost	\$1,609.20
Natural Gas	\$1,500.00
Monthly Utilities	\$3,109

O&M Costs

Expected Duration (months)	24
Monthly O&M (excluding Utilities)	\$2,300.00
Total O&M Costs (incl Utilities)	\$129,821

System Decommissioning	\$50,000
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Total Cost	\$338,695
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Table 10
Cost Estimate for Alternative 3 - In-Situ Chemical Oxidation
ARCO Facility #1919

Capital Equipment and Construction

Ozone Sparge System	\$45,000
System Construction	\$125,000
System Start Up And Trouble Shooting	\$6,000
Total Cap/Const	\$176,000

Drilling Costs

Number of Ozone Sparge Wells	12
Drillers Cost for Dual SVE/AS (\$/ft)	\$25
Depth per Well	20
Permits	\$1,974
Consultant Fees	\$7,500
Total Drilling Costs	\$15,474

Utility Costs

Total Motor HP	5
Run Time (%)	100%
Power Cost (\$/kw-hr)	\$0.15
Monthly Power Cost	\$402.30
Monthly Utilities	\$402

O&M Costs

Expected Duration (months)	12
Monthly O&M (excluding Utilities)	\$2,000.00
Total O&M Costs (incl Utilities)	\$28,828

System Decommissioning	\$50,000
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Total Cost	\$270,302
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TABLE 11
EVALUATION MATRIX FOR REMEDIAL ALTERNATIVES
ARCO FACILITY #1919

Evaluation Criteria	Alternative 1 – Remediation by Natural Attenuation (RNA)	Alternative 2 – Air Sparging (AS) with Soil Vapor Extraction (SVE)	Alternative 3 – In-Situ Chemical Oxidation (ISCO) using Ozone Sparging
1. Description of Alternative	Dissolved hydrocarbon plume is allowed to reach State Maximum Contaminant Levels by natural attenuation.	SVE will be used to remediate the unsaturated soil zone. Air sparging (AS) would be utilized to accelerate remediation of impacted soil. AS will remove dissolved contaminants, enhance SVE system effectiveness, and promote bioremediation.	Compressed air containing approximately 500 ppmv ozone is injected into sparge wells. The ozone/air mixture directly oxidizes hydrocarbons in the saturated zone and promotes biodegradation by increasing dissolved oxygen concentrations.
2. Level of Protection of Human Health, the Environment, and Beneficial Uses of Ground and Surface Waters	<p>This alternative provides an adequate level of protection of human health, the environment, and beneficial uses of ground and surface waters.</p> <p>Implementation would not significantly increase the potential exposure of humans to hydrocarbon impacted soil and groundwater.</p>	<p>This alternative provides an adequate level of protection of human health, the environment, and beneficial uses of ground and surface waters.</p> <p>Implementation will slightly increase the potential exposure of humans and the environment through the extraction, treatment, and discharge of impacted groundwater and/or soil vapor. This potential exposure would be limited to a moderate time span and can be controlled by monitoring and proper training of construction and O&M personnel.</p>	Same as Alternative 2
3. Reduction of Hydrocarbons	This alternative will reduce the concentration of contaminants dissolved in groundwater and adsorbed to soil in the saturated zone.	This alternative will reduce the concentration of contaminants below the site in the vadose and saturated zones.	Same as Alternative 2
4. Implementation and Operation	Easy to implement. No disruptions to business operations during implementation.	Moderately difficult to implement. Requires power/gas and construction/O&M of AS/SVE systems. Some disruption to local traffic and business operations for the site during installation and operation of the remediation system.	Moderately difficult to implement. Requires power and construction/O&M of ozone sparge system. Some disruption to local traffic and business operations for the site during installation and operation of the remediation system.

TABLE 11 (CONT.)
EVALUATION MATRIX FOR REMEDIAL ALTERNATIVES
ARCO FACILITY #1919

Evaluation Criteria	Alternative 1 – Remediation by Natural Attenuation (RNA)	Alternative 2 – Air Sparging (AS) with Soil Vapor Extraction (SVE)	Alternative 3 – In-Situ Chemical Oxidation (ISCO) using Ozone Sparging
5. Cost Effectiveness	Cost Estimate = \$0	Cost Estimate = \$338,695	Cost Estimate = \$270,302
6. Compliance with Regulatory Guidelines	This alternative can be implemented within regulatory guidelines.	This alternative can be implemented within regulatory guidelines.	This alternative can be implemented within regulatory guidelines.
7. Short Term Effectiveness	This alternative is effective in the short term because natural attenuation processes appear to be occurring.	This alternative is effective in the short term.	This alternative is effective in the short term.
8. Long Term Effectiveness	Effective in the long term.	Same as Alternative 1.	Same as Alternative 1.
9. Community Exceptance	The impact to the nearby community and population would be negligible.	Same as Alternative 1.	Same as Alternative 1.
10. Impacts on Water Conservation	This alternative would not impact water conservation either negatively or positively.	Same as Alternative 1.	Same as Alternative 1.

TABLE 12
CONCENTRATION TREND ANALYSIS SUMMARY
ARCO Facility #1919

Well	Compound Evaluated	Max Contaminant Level - C_{MCL} ($\mu\text{g/L}$) ⁽¹⁾	Initial Max. Concentration - C_0 ($\mu\text{g/L}$) ⁽²⁾	Sampling Date for C_0	Current Reference Date Used	Estimated Degradation Rate Constant - k (day ⁻¹)	Time to Reach MCL from C_0 - t (days)	Current Elapsed Time from Date C_0 Reported (days)	Estimated Time to Reach C_{MCL} from Current Reference Date (yrs)	Comments
MW-16	Benzene	1	5,900	09/28/94	NA	0.0039	NA	NA	NA	Degradation rate estimated from full data set from MW-16, which was located outside of AS/SVE system influence.
MW-15	Benzene	1	1,700	09/13/05	10/21/05	0.0039	1,907	38	5.12	Degradation rate from MW-16 applied to post-remediation maximum concentration in well MW-15 and used to estimate time to MCL.
MW-21	Benzene	1	490	03/08/05	10/21/05	0.0039	1,588	227	3.73	Degradation rate from MW-16 applied to post-remediation maximum concentration in well MW-21 and used to estimate time to MCL.
MW-16	MTBE	13	45,000	03/20/97	10/21/05	0.001	8,149	3,137	13.73	Degradation rate and time to MCL estimated from full data set from MW-16, which is located outside of AS/SVE system influence.
MW-18	MTBE	13	11,000	05/10/00	10/21/05	0.0006	11,235	1,990	25.33	Degradation rate and time to MCL estimated from full data set from MW-18, which is located outside of AS/SVE system influence.
MW-15	MTBE	13	16,000	09/13/05	10/21/05	0.001	7,115	38	19.39	Degradation rate from MW-16 applied to post-remediation maximum concentration in well MW-15 and used to estimate time to MCL.
MW-15	MTBE	13	16,000	09/13/05	10/21/05	0.0006	11,859	38	32.39	Degradation rate from MW-18 applied to post-remediation maximum concentration in well MW-15 and used to estimate time to MCL.

Notes: Equation used to estimate time to reach MCL is $C = C_0 e^{-kt}$, where:

C = Concentration at time t

C_0 = Initial Concentration

k = Degradation rate constant (time⁻¹)



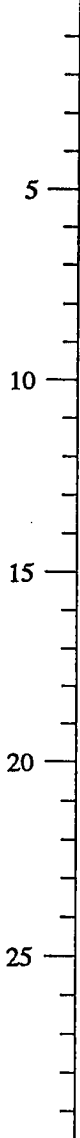


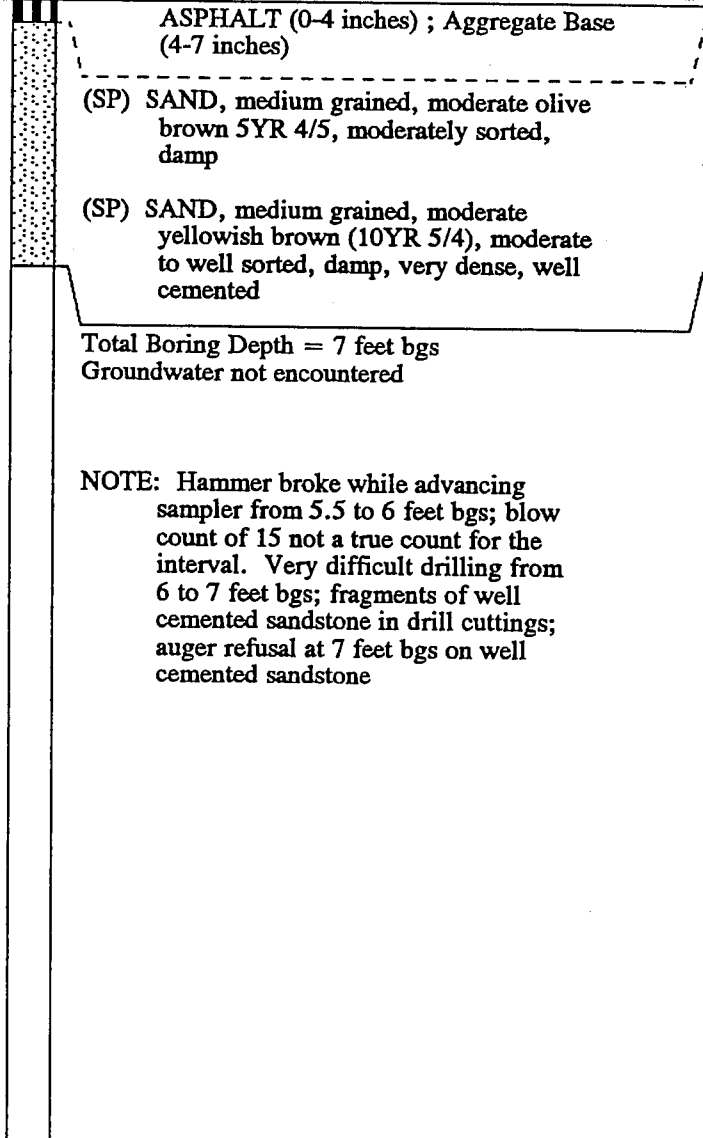



t = time

NA = Not applicable. Benzene not detected at laboratory reporting limits.

(1) State of California Primary Maximum Contaminant Level (MCL) for Drinking Water

(2) Recent maximum concentration from post-remediation groundwater monitoring data

APPENDIX A
BORING/WELL LOGS
CORRECTIVE ACTION PLAN
ATLANTIC RICHFIELD COMPANY
ARCO Facility #1919
660 Via de la Valle
Solana Beach, California
SAM Case #H05166-002
SECOR PROJECT NO. 08BP.01919.07
October 21, 2005

Logged By: Lori Guthrie		Date Drilled: 10-12-92		Drilling Contractor: Tri-County Drilling		Method/Equipment: Ring Sampler 2.5" Simco 4000		Boring Number: B2	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam.(in.): 6.5		Ground Elev.(ft.): Not Observed		Total Depth (ft.): 7		Drive Wt.(lbs.): 140	
Drop Dist.(in.): 30									
Well Construction	Depth, (ft.)	Sample Type	Blows/Foot	Description			Sample No	Hnu Readings	Other Tests
 Asphalt Concrete  Backfilled with medium Bentonite Chips									
<p>Total Boring Depth = 7 feet bgs Groundwater not encountered</p> <p>NOTE: Hammer broke while advancing sampler from 5.5 to 6 feet bgs; blow count of 15 not a true count for the interval. Very difficult drilling from 6 to 7 feet bgs; fragments of well cemented sandstone in drill cuttings; auger refusal at 7 feet bgs on well cemented sandstone</p>									
<p>The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.</p>									

Project No. 40007-037-01 Date 10-15-92

Log of Boring

Figure

A-2 (Sheet 1 of 1)

Logged By: Lori Guthrie		Date Drilled: 10-12-92		Drilling Contractor: Tri-County Drilling		Method/Equipment: Ring Sampler 2.5" Simco 4000		Boring Number: B3	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam.(in.): 6.5		Ground Elev.(ft.):		Groundwater Elevation (ft.): ▽ ▽ Not Observed		Total Depth (ft.): 11	
						Drive Wt.(lbs.): 140		Drop Dist.(in.): 30	
Well Construction	Depth, (ft.)	Sample Type	Blows/Foot	Description			Sample No	Flow Readings	Other Tests
Soil Cuttings	5	22 22 26	50 50	Unpaved surface (SM) Silty SAND, fine grained, dark yellowish orange (10YR 6/6), moderately sorted, damp			B3-1		
				(SP) SAND, fine to medium grained, pale yellowish brown to very pale orange (10YR 6/2 - 10YR 8/2) with dark yellowish orange (10YR 6/6) oxidation, moderately sorted, moist, dense, some interlayered sandy SILT					
Backfilled with medium Bentonite Chips	10	50/6"		(SM) Silty SAND, fine grained, grayish orange (10YR 7/4), moderately sorted, moist			B3-2		
				(SP) SAND, medium to coarse grained, yellowish gray (5YR 7/2) to very pale orange (10YR 5/2) with some oxidation, moderately sorted, damp to moist, very dense					
	15			(SP) SAND, medium grained, dark yellowish orange, moderately sorted, damp to moist, very dense			B3-3		
	20			Total Boring Depth = 11 feet bgs Groundwater not encountered					
	25			NOTE: Auger refusal at 11 feet bgs on well-cemented sandstone					

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Project No. 40007-037-01 Date 10-15-92

Log of Boring

Figure

A-3

(Sheet 1 of 1)

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 10/04/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: CONTINUOUS CORE SAMPLING
8-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. MEYER/T. JUDY BORING NUMBER: B-1 / MW-1

DRILLING COMPANY: VALLEY WELL DRILLING APPROXIMATELY 10 FEET
ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	MATERIAL ENCOUNTERED	USCS
0		THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (4 inches).	
		Damp, olive black (5Y2/1), slightly coarse, fine- to medium-grained SAND. Sample B1-5. No CGI. TPH < 10 ppm.	SP
5	++	Dark stained pea gravel and conglomerate, 3-inch-thick interval at 5 feet below grade.	GP
	V		
10	++	Saturated, pale yellow (5Y8/4) with dark brown oxidized staining, fine- to medium-grained SAND. Sample B1-10. CGI > 100% LEL. TPH = 24,000 ppm.	SP
		Light gray (5Y7/1), fine- to medium-grained SAND.	SP
		Total Depth = 14 feet below grade. Boring converted to Monitoring Well (MW-1). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
TRPH = total recoverable petroleum hydrocarbons
B = benzene
T = toluene
E = ethylbenzene
X = total xylenes
ND = not detected at laboratory detection limits
Well elevations are measured to top of casing.
Characters in parentheses represent Munsell color code designations.

ppm = parts per million
CGI/TLV = combustible gas reading
I = sampling interval
LEL = lower explosive limit
++ = sample analyzed for hydrocarbons
V = ground water piezometric surface

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Total Depth = 14 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 10/04/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. MEYER/T. JUDY BORING NUMBER: B-2 / MW-2
APPROXIMATELY 10 FEET

DRILLING COMPANY: VALLEY WELL DRILLING ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (4 inches).	
5	++ ∇	3,3,3	Damp, dark yellowish brown (10YR3/6), slightly clayey, slightly silty, fine-grained SAND. Sample B2-5. CGI = 0 ppm. TPH < 10 ppm.	SP
10	++	10,14,10	Moist, greenish gray (5GY8/1), silty, very fine-grained SAND. Sample B2-10. No CGI. TPH < 10 ppm.	SM
15		3,4,7	Saturated, light brownish gray (10YR6/2), fine- to medium-grained SAND. No sample. No CGI.	SP
			Total Depth = 17 feet below grade. Boring converted to Monitoring Well (MW-2). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
TRPH = total recoverable petroleum hydrocarbons
B = benzene
T = toluene
E = ethylbenzene
X = total xylenes
ND = not detected at laboratory detection limits
Well elevations are measured to top of casing.
Characters in parentheses represent Munsell color code designations.

ppm = parts per million
CGI/TLV = combustible gas reading
I = sampling interval
LEL = lower explosive limit
++ = sample analyzed for hydrocarbons
∇ = ground water piezometric surface

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Total Depth = 17 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 10/04/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. MEYER/T. JUDY BORING NUMBER: B-3 / MW-3
 APPROXIMATELY 10 FEET

DRILLING COMPANY: VALLEY WELL DRILLING ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (4 inches).	
5	++	3,2,3	Damp, dark brown (5YR2/5), silty, fine-grained SAND. Sample B3-5. CGI = 150 ppm. TPH < 10 ppm.	SM
	V			
10	++	2,4,5	Wet, dark brown (10YR3/3), silty, fine-grained SAND with some dark hydrocarbon staining. Sample B3-10. No CGI. Poor recovery. TPH = 12 ppm.	SM
15			Saturated, greenish gray (5G6/1), fine- to medium-grained SAND. No sample recovery at 15 feet. No CGI.	SP
		14, 18	Saturated, gray (10YR5/1), fine- to coarse-grained SAND. No sample. No CGI.	SP
			Total Depth = 18 feet below grade. Boring converted to Monitoring Well (MW-3). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 V = ground water piezometric surface

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Total Depth = 18 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 10/04/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. MEYER/T. JUDY BORING NUMBER: B-4

DRILLING COMPANY: VALLEY WELL DRILLING ELEVATION: APPROXIMATELY 10 FEET ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (4 inches).	
5	++	1,1,1	Damp, pinkish gray (5YR7/2), fine- to medium-grained SAND. Sample B4-5. CGI = 200 ppm. TPH < 10 ppm.	SP
10	++	1,2,2	Wet, brownish yellow (10YR6/6) with dark staining, slightly silty, fine- to medium-grained SAND. Sample B4-10. CGI = 100 ppm. TPH = 13 ppm.	SP
			Total Depth = 13 feet below grade. Boring completed by grouting to 1 foot below grade with bentonite grout, and capped with concrete.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 ∇ = ground water piezometric surface

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Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

Total Depth = 13 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919

BORING DATE: 10/04/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH

BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. MEYER/T. JUDY

BORING NUMBER: B-5 / MW-4

DRILLING COMPANY: VALLEY WELL DRILLING

APPROXIMATELY 10 FEET
ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (4 inches).	
5	++	9,21,25	Slightly moist, very pale brown (10YR8/4), with orange staining, fine- to medium-grained SAND with orange iron oxide staining. Sample B5-5. CGI = 5% LEL. TPH = 82 ppm.	SP
	V			
10	++	10,11,7	Saturated, very pale brown (10YR8/4) with dark staining, fine- to medium-grained SAND. Sample B5-10. CGI = 50 ppm. TPH < ND.	SP
			COBBLE layer at 12 feet.	
15		None taken	Saturated, light gray (N7), fine- to medium-grained SAND. No sample. No CGI.	SP
			Total Depth = 17 feet below grade. Boring converted to Monitoring Well (MW-4). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 V = ground water piezometric surface

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Total Depth = 13 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 10/05/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. MEYER/T. JUDY BORING NUMBER: B-6 / MW-5
 APPROXIMATELY 10 FEET

DRILLING COMPANY: VALLEY WELL DRILLING ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (4 inches).	
5	++	13,14,18	Slightly moist, light gray (5Y6/1), slightly silty, fine- to medium-grained SAND. Sample B6-5. CGI = 6% LEL. TPH < 10 ppm.	SP
10	++	11,14,11	Wet, light gray (5Y6/1) to brownish yellow (10YR6/6), slightly silty, fine- to medium-grained SAND. Sample B6-10. CGI = 100 ppm. TPH < 10 ppm.	SP
15		18,4/5"	Saturated, gray (5Y5/2), with orange staining, fine- to coarse-grained SAND. No sample. No CGI. Rounded COBBLES at 15 feet.	SW
			Saturated, grayish green (5G5/2), clayey SILT.	ML
			Total Depth = 16 feet below grade. Boring converted to Monitoring Well (MW-5). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 ∇ = ground water piezometric surface

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Characters in parentheses represent Munsell color code designations.

Total Depth = 16 Feet

ALION GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 10/05/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. MEYER/T. JUDY BORING NUMBER: B-7 / MW-6
APPROXIMATELY 10 FEET

DRILLING COMPANY: VALLEY WELL DRILLING ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (4 inches).	
5	++	12,17,18	Slightly damp, grayish yellow green (5GY7/2), fine- to medium-grained SAND. Sample B7-5. TLV = 200 ppm. TPH < 10 ppm.	SP
	V			
10	++	9,12,17	Saturated, grayish yellow green (5GY7/2), fine- to medium-grained SAND. Sample B7-10. TLV = 200 ppm. TPH < 10 ppm.	SP
			Saturated, grayish green (5G5/2), clayey SILT.	ML
			Total Depth = 14 feet below grade. Boring converted to Monitoring Well (MW-6). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
TRPH = total recoverable petroleum hydrocarbons
B = benzene
T = toluene
E = ethylbenzene
X = total xylenes
ND = not detected at laboratory detection limits
Well elevations are measured to top of casing.
Characters in parentheses represent Munsell color code designations.

ppm = parts per million
CGI/TLV = combustible gas reading
I = sampling interval
LEL = lower explosive limit
++ = sample analyzed for hydrocarbons
V = ground water piezometric surface

Page 1 of 1

Total Depth = 14 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 10/05/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. MEYER/T. JUDY BORING NUMBER: B-8 / MW-7

DRILLING COMPANY: VALLEY WELL DRILLING ELEVATION: APPROXIMATELY 10 FEET ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (4 inches).	
5	++	None taken	Moist, dark reddish brown (5YR3/3), pebbly, clayey, fine- to very coarse-grained SAND. Sample B8-5. No CGI. TPH = 2,400 ppm.	SW
	V	1,2,3	Damp, dark brown (10YR3/3), slightly pebbly, clayey SILT with abundant pyrite and white mica flakes. Very malleable. Sample B8-8. No CGI. TPH = 47 ppm.	ML
10	++	2,2,3	Damp, dark brown (5YR2/4), micaceous, slightly pebbly, clayey SILT. Sample B8-10. No CGI.	ML
15		2,3,3	Saturated, dark gray (N3), slight clayey, slightly silty, fine- to medium-grained SAND. Sample B8-15. No CGI.	SP
			COBBLE layer at 17 feet.	
			Total Depth = 17 feet below grade. Boring Monitoring Well (MW-7). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 V = ground water piezometric surface

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Total Depth = 17 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 10/05/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. MEYER/T. JUDY BORING NUMBER: B-9 / MW-8
 APPROXIMATELY 10 FEET

DRILLING COMPANY: VALLEY WELL DRILLING ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (4 inches).	
5	++	4,7,13	Slight damp, greenish gray (5GY6/1), slightly silty, fine- to medium-grained SAND. Sample B9-5. No CGI. TPH < 10 ppm.	SW
	∇	9,13,9	Wet, greenish gray (5GY6/1) to white (N9), slightly silty, fine- to medium-grained SAND. Sample B9-9. TPH < 10 ppm.	SP
15		60/6"	Damp, brownish yellow (10YR6/6), slightly clayey, silty, fine- to medium-grained SAND.	SM
			Total Depth = 15 feet below grade. Boring was converted to Monitoring Well (MW-8). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 ∇ = ground water piezometric surface

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Total Depth = 15 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 2/12/92

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. GOODMACHER BORING NUMBER: B-10 / MW-10
APPROXIMATELY 10 FEET

DRILLING COMPANY: A AND R DRILLING ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW COUNTS	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (4 inches). Moist, reddish brown (2.5YR4/4), clayey, sandy GRAVEL (Fill).	SP
			Damp, light olive gray (5Y6/2), medium-grained SAND.	SP
			Dry, light gray (5Y6/2), medium-grained SAND.	SP
			BEGIN DRIVE SAMPLING	
5	NR		Dry, light gray (5Y7/2), medium-grained SAND. TLV = 15 ppm.	SP
	++	39, 19, 22	Dry, light yellowish brown (2.5Y6/2), cemented, fine- to medium-grained SAND. Dry, olive brown (2.5Y4/4), fine- to medium-grained SAND. Sample B10-6.5. TPH < 5 ppm.	SP
		10, 14, 17	Dry, white (2.5Y8/2), fine- to medium-grained SAND. TLV = 10 ppm.	SP
	++ V		Damp, white (N8), medium- to coarse-grained SAND. Water on sampler. Sample B10-8.5. No TLV. TPH < 5 ppm.	SP
		10, 14, 15		
10				
		19, 18, 13	Saturated, brownish yellow (10YR6/8), medium- to coarse-grained SAND.	SP
			Saturated, light gray (N7), coarse-grained SAND.	
		16, 32, 37	Saturated, brownish yellow (10YR6/6), slightly silty, very fine- to fine-grained SAND. Wet, gray (N5), slightly silty, fine-grained SAND.	SP
		18, 21, 30	Wet, olive yellow (2.5Y6/6), slightly silty, fine-grained SAND.	SP
15	++	18, 21, 31	Damp, gray (N5), slightly silty, fine-grained SAND with some shells. Sample B10-15.5. TLV = 20 ppm. TPH < 5 ppm.	SP
			Damp, gray (N5), slightly silty, fine-grained SAND.	SP
		8, 13, 19		
			Wet, light olive brown (2.5Y6/2), slightly silty, fine-grained SAND.	SP
		16, 50/5"	Saturated, grayish brown (10YR5/2), slightly silty, fine-grained SAND.	SP
		18, 50/5"	Saturated, light gray (2.5Y7/2) and red (2.5YR4/6; in fractures), silty, fine-grained SAND.	SP
20			Total Depth = 20 feet below grade. Boring converted to Monitoring Well (MW-10). See Well Construction Diagram for details.	SM

NOTES: TPH = total petroleum hydrocarbons
TRPH = total recoverable petroleum hydrocarbons
B = benzene
T = toluene
E = ethylbenzene
X = total xylenes
ND = not detected at laboratory detection limits
Well elevations are measured to top of casing.
Characters in parentheses represent Munsell color code designations.

ppm = parts per million
CGI/TLV = combustible gas reading
I = sampling interval
LEL = lower explosive limit
++ = sample analyzed for hydrocarbons
V = ground water piezometric surface
NR = no recovery

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Total Depth = 20.0 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919

BORING DATE: 02/12/92

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH

BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. GOODMACHER

BORING NUMBER: B-11 / MW-11

DRILLING COMPANY: A AND R DRILLING

APPROXIMATELY 10 FEET

ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW COUNTS	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (6 inches). Moist, reddish brown (2.5YR 5/4), clayey, gravelly SAND (Fill).	SP
5		12, 39, 41	Damp, brownish yellow (10 YR 6/8), slightly silty, fine-grained SAND. Damp, light gray (N7), fine- to medium-grained SAND. Sample B11-5.0. TLV = 50 ppm.	SP SP
	++	7, 32, 38	Damp, light gray (10YR7/1), slightly silty, fine-grained SAND. Sample B11-7.0. TPH < 5 ppm.	SP
	∇		Damp, pink (7.5YR7/4), fine- to medium-grained SAND, with oxidized zones. Sample B11-8.0. TLV = 0 ppm.	SP
		10, 17, 26	Damp, dark brown (7.5YR4/2), fine- to medium-grained SAND. Wet, pink (7.5YR7/4), fine- to medium-grained SAND.	SP
	++		Saturated, pink (7.5YR7/4), fine- to medium-grained SAND.	
10		7, 18, 36	Saturated, gray (N5), silty, fine-grained SAND. Sample B11-9.5. TPH < 5 ppm.	SP
			Saturated, reddish yellow (7.5YR6/6), slightly silty, fine-grained SAND. Rock in sampler.	SP
		18, 34, 50	Saturated, grayish brown (10YR5/2), slightly silty, medium- to coarse-grained SAND.	SP
	++		Saturated, grayish brown (10YR5/2), slightly silty, medium- to coarse-grained SAND. Sample B11-12.5. TPH < 5 ppm.	SP
			Damp, brownish yellow (10YR6/6), silty, very fine- to fine-grained SAND. Sample B11-12.5. TLV = 20 ppm.	SM
15		22, 50	Damp to moist, gray (10YR5/1), silty, very fine-grained SAND with some shells. Sample B11-15.0. TLV = 20 ppm.	SM
		11, 18, 34	Saturated, brown (7.5YR5/2), medium- to coarse-grained SAND.	SP
			Saturated, gray (10YR5/1), silty, very fine-grained SAND with some pebbles. Sample B11-16.5. TLV = 20 ppm.	SM
			Total Depth = 17.0 feet below grade. Boring converted to Monitoring Well (MW-11). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
TRPH = total recoverable petroleum hydrocarbons
B = benzene
T = toluene
E = ethylbenzene
X = total xylenes
ND = not detected at laboratory detection limits
Well elevations are measured to top of casing.
Characters in parentheses represent Munsell color code designations.

ppm = parts per million
CGI/TLV = combustible gas reading
I = sampling interval
LEL = lower explosive limit
++ = sample analyzed for hydrocarbons
∇ = ground water piezometric surface

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Total Depth = 17.0 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919

BORING DATE: 02/12/92

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH

BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. GOODMACHER

BORING NUMBER: B-12 / MW-12

DRILLING COMPANY: A AND R DRILLING

APPROXIMATELY 10 FEET

ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW COUNTS	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (4 inches). Moist, reddish brown (2.5YR4/4), clayey, sandy GRAVEL (Fill). Cemented sandstone. Damp, olive gray (5Y4/2), fine- to medium-grained SAND with some silt.	SP SP
5		12, 23, 38	Damp, olive gray (5Y4/2), fine- to medium-grained SAND with some silt. Damp, brownish yellow (10YR6/6), oxidized, fine- to medium-grained SAND with some silt. Damp, olive gray (5Y4/2), fine- to medium-grained SAND with some silt. Sample B12-6.0. TLV = 85 ppm. TPH < 5 ppm.	SP SP SP
	++	9, 13, 19	Moist, olive gray (5Y4/2), fine- to medium-grained SAND with some silt.	SP
	V	9, 18, 28	Moist, olive gray (5Y8/1), fine- to medium-grained SAND with some silt. Sample B12-8.0. TLV = 100 ppm.	SP
	++	10, 16, 18	Moist, very dark gray (5Y3/1), fine- to medium-grained SAND with some silt. Sample B12-9.5. TLV = 3,000 ppm. TPH < 5 ppm.	SP
10			Sampler is wet. No recovery (rock in sampler). Saturated, dark gray (5Y4/1), medium-grained SAND with some silt. Sampler B12-11.5. TLV = 110 ppm.	SP
15		8, 13, 28	No recovery (gravels in sampler). Sampler is wet.	
			Saturated, dark gray (5Y4/1), fine- to medium-grained SAND with pebbles. Sample B12-16.0. TLV = 20 ppm.	SP
	++	32, 50	Wet, light yellowish brown (2.5Y6/4), silty, very fine- to fine-grained SAND. Sample B12-17.0. TLV = 0 ppm. TPH < 5 ppm.	SM
			Total Depth = 17.5 feet below grade. Boring converted to Monitoring Well (MW-12). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
TRPH = total recoverable petroleum hydrocarbons
B = benzene
T = toluene
E = ethylbenzene
X = total xylenes
ND = not detected at laboratory detection limits
Well elevations are measured to top of casing.
Characters in parentheses represent Munsell color code designations.

ppm = parts per million
CGI/TLV = combustible gas reading
I = sampling interval
LEL = lower explosive limit
++ = sample analyzed for hydrocarbons
V = ground water piezometric surface

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Total Depth = 17.5 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919

BORING DATE: 02/12/92

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH

BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. GOODMACHER

BORING NUMBER: B-13 / MW-13
APPROXIMATELY 10 FEET

DRILLING COMPANY: A AND R DRILLING

ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW COUNTS	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE.	
			Damp, grayish brown (10YR4/2), silty, fine-grained SAND.	SM
5		1, 1, 2	Moist, dark gray (10YR4/1), silty, fine-grained SAND.	SM
	V	1, 1, 1		
	++		Moist, dark gray (10YR4/1), silty, fine-grained SAND. Sample B13-7.5. No TLV.	SM
		2, 4, 7	TPH < 5 ppm. Saturated, dark gray (10YR4/1), silty, fine-grained SAND.	SM
			Sample B13-9.0. No TLV. TPH < 5 ppm.	
10	++	2, 3, 7	Saturated, dark gray (10YR4/1), silty, fine-grained SAND.	SM
			Saturated, grayish brown (10YR5/2), silty, fine-grained SAND.	SM
			Sample B13-10.5. TLV = 0 ppm.	
15			Refusal to sampler. Grinding on pebbles.	
	++	28, 50	Damp, olive gray (5Y4/2), silty, fine-grained SAND.	SM
			Sample B13-16.5. TLV = 0 ppm. TPH < 5 ppm.	
			Total Depth = 18.0 feet below grade. Boring converted to Monitoring Well (MW-13). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
TRPH = total recoverable petroleum hydrocarbons
B = benzene
T = toluene
E = ethylbenzene
X = total xylenes
ND = not detected at laboratory detection limits
Well elevations are measured to top of casing.
Characters in parentheses represent Munsell color code designations.

ppm = parts per million
CGI/TLV = combustible gas reading
I = sampling interval
LEL = lower explosive limit
++ = sample analyzed for hydrocarbons
V = ground water piezometric surface

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Total Depth = 18.0 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 02/13/92

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. GOODMACHER BORING NUMBER: B-14 / MW-14
APPROXIMATELY 10 FEET

DRILLING COMPANY: A AND R DRILLING ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW COUNTS	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (8 inches). Damp, pale yellow (5Y8/4), fine-grained SAND.	SP
5		9, 22, 38	Damp, pale yellow (5Y8/4), medium- to coarse-grained SAND. Sample B14-6.0. TLV = 15 ppm.	SP
	++	10, 15, 42	Damp, pale yellow (5Y8/4), medium- to coarse-grained SAND. Sample B14-6.5. No TLV. TPH < 5 ppm.	SP
			Moist, reddish yellow (7.5YR7/8), oxidized, silty, fine-grained SAND. Sample B14-8.0. TLV = 10 ppm.	SP
	∇	14, 19, 29	Moist, pale yellow (5Y8/4), medium- to coarse-grained SAND.	SP
			Wet, pale yellow (5Y8/4), medium- to coarse-grained SAND.	SP
			No recovery.	
10		9, 14, 17	Saturated, pale yellow (5Y8/4), medium- to coarse-grained SAND.	SP
	++		Saturated, pale yellow (5Y8/4), oxidized, coarse-grained SAND.	SP
			Saturated, white (2.5Y8/2), fine- to medium-grained SAND.	SP
			Sample B14-10.5. TLV = 45 ppm. TPH < 5 ppm.	
		10, 14, 19	Saturated, yellowish brown (10YR5/6), fine-grained SAND.	SP
			Saturated, gray (10YR5/1), fine-grained SAND.	SP
			Damp, olive gray (5Y5/2), SILT with zones of oxidation.	ML
			Damp, reddish yellow (7.5YR7/8), oxidized, medium- to very coarse-grained SAND with small pebbles.	SP
15		14, 22, 31	Saturated, white (2.5Y8/2), medium- to coarse-grained SAND.	SP
	++		Saturated, white (2.5Y8/2), oxidized, medium- to coarse-grained SAND with some silt.	ML
			Wet, strong brown (7.5YR4/6), fine sandy SILT. Sample B14-16.0. TLV = 0 ppm.	
			TPH < 5 ppm.	
			Wet, light brown (7.5YR6/4), fine sandy SILT.	ML
		9, 12, 21	Saturated, white (2.5Y8/2), coarse-grained SAND.	SP
			Saturated, reddish yellow (7.5YR7/8), fine sandy SILT.	ML
			Saturated, white (2.5Y8/2), silty, very fine- to fine-grained SAND.	SP
			Sample B14-17.5. TLV = 60 ppm.	
			Total Depth = 18.0 feet below grade. Boring converted to Monitoring Well (MW-14). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
TRPH = total recoverable petroleum hydrocarbons
B = benzene
T = toluene
E = ethylbenzene
X = total xylenes
ND = not detected at laboratory detection limits

ppm = parts per million
CGI/TLV = combustible gas reading
I = sampling interval
LEL = lower explosive limit
++ = sample analyzed for hydrocarbons
∇ = ground water piezometric surface

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Well elevations are measured to top of casing.

Characters in parentheses represent Munsell color code designations.

Total Depth = 18.0 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 02/13/92
 LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER
 GEOLOGIST: J. GOODMACHER BORING NUMBER: B-15 / MW-15
 DRILLING COMPANY: A AND R DRILLING APPROXIMATELY 10 FEET
 ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW COUNTS	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Concrete (8 inches).	
			Moist, reddish brown (2.5YR 5/4), clayey, gravelly SAND (Fill).	SP
			Damp, pale yellow (5Y8/4), fine-grained SAND.	SP
5				
	∇	1, 1, 2	Moist, black (5YR2.5/1), slightly very fine-grained, sandy SILT. Sample B15-7.0. TLV = 5,000 ppm. TPH = 1,100 ppm.	ML
	++	1, 1, 2	Moist, black (5YR2.5/1), micaceous, silty, very fine-grained SAND.	SM
	++	1, 2, 3	Sample B15-8.5. TLV = 300 ppm. TPH = 1,200 ppm. B = 2.7, T = 21.0, E = 8.1, X = 50.0 ppm. Moist, black (5YR2.5/1), micaceous, silty, very fine-grained SAND.	SM SM
10		1, 2, 3	Sample B15-10.0. TLV = 80 ppm. Moist, black (5YR2.5/1), micaceous, silty, very fine-grained SAND.	SM
		1, 2, 1	Sample B15-11.5. TLV = 80 ppm. Moist, black (5YR2.5/1), micaceous, silty, very fine-grained SAND.	SM
		1, 2, 3	Sample B15-13.0. TLV = 90 ppm. Moist, black (5YR2.5/1), micaceous, silty, very fine-grained SAND.	SM
15		2, 2, 3	Sample B15-14.5. TLV = 90 ppm. Saturated, black (5YR2.5/1), micaceous, silty, very fine- to fine-grained SAND. Saturated, black (5YR2.5/1), micaceous, slightly silty, fine-grained SAND. Saturated, black (5YR2.5/1), micaceous, silty, fine-grained SAND with shells. Sample B15-16.0. No TLV. TPH < 5 ppm.	SM SM SM SM
	++		Total Depth = 16.5 feet below grade. Boring converted to Monitoring Well (MW-15). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 ∇ = ground water piezometric surface

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Total Depth = 16.5 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919

BORING DATE: 02/13/92

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH

BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. GOODMACHER

BORING NUMBER: B-16 / MW-16
APPROXIMATELY 10 FEET

DRILLING COMPANY: A AND R DRILLING

ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW COUNTS	MATERIAL ENCOUNTERED	USCS
0			THREE POST HOLES DRILLED TO 4 FEET BELOW GRADE. Asphaltic Concrete (16 inches).	
			Moist, reddish brown (2.5YR5/4), clayey, gravelly SAND (Fill).	SP
			Damp, pale yellow (5Y8/4), fine-grained SAND.	SP
5		1, 1, 1	Moist, light olive brown (2.5Y5/6), slightly silty, fine-grained SAND.	SP
	++		Sample B16-6.0. TLV = 150 ppm. TPH < 5 ppm.	SP
	∇	1, 1, 1	No recovery. Moist, light olive brown (2.5Y5/6), slightly silty, fine-grained SAND.	SP
		1, 1, 1	Moist, very dark grayish brown (10YR3/2), silty, fine-grained SAND. Sample B16-8.0. TLV = 180 ppm.	SM
	++		Wet, very dark grayish brown (10YR3/2), silty, fine-grained SAND. Sample B16-9.5. TLV = 250 ppm. TPH < 5 ppm.	SM
10		2, 2, 3	Moist, black (5YR5.2/1), micaceous, silty, very fine-grained SAND.	SM
		2, 3, 4	Moist, black (5YR2.5/1), very micaceous, silty, very fine-grained SAND. Sample B16-11.0. TLV = 200 ppm.	SM
		4, 5, 7	Moist, black (5YR2.5/1), micaceous, silty, fine-grained SAND. Sample B16-12.5. TLV = 50 ppm.	SM
15		2, 3, 3	Sample B16-14.0. TLV = 120 ppm. Saturated, black (5YR2/1), micaceous, silty, very fine- to fine-grained SAND.	SM
	++	3, 4, 6	Saturated, dark gray (N4), micaceous, silty, very fine- to fine-grained SAND. Saturated, dark gray (N4), micaceous, slightly silty, fine- to medium-grained SAND. Sample B16-15.5. No TLV.	SM SM
			Sample B16-17.0. TLV = 160 ppm. TPH < 5 ppm.	
			Total Depth = 17.5 feet below grade. Boring converted to Monitoring Well (MW-16). See Well Construction Diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
TRPH = total recoverable petroleum hydrocarbons
B = benzene
T = toluene
E = ethylbenzene
X = total xylenes
ND = not detected at laboratory detection limits
Well elevations are measured to top of casing.
Characters in parentheses represent Munsell color code designations.

ppm = parts per million
CGI/TLV = combustible gas reading
I = sampling interval
LEL = lower explosive limit
++ = sample analyzed for hydrocarbons
∇ = ground water piezometric surface

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Total Depth = 17.5 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 (600064-21) BORING DATE: 7/22/92

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER

GEOLOGIST: J. GOODMACHER BORING NUMBER: B-17 / MW-17

DRILLING COMPANY: VALLEY WELL DRILLING ELEVATION: APPROXIMATELY 10 FEET ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0			THREE HAND AUGER BORINGS DRILLED TO 5 FEET BELOW GRADE. Asphaltic concrete (4 inches). Damp, reddish brown (2.5YR4/4), clayey, sandy GRAVEL.	GC
5	++	4, 3, 3	Damp, very dark grayish brown (10YR3/2), fine-grained SAND with some silt. Sample B-17-4.5. TPH < 10 ppm.	SP
	++	1, 1, 1	Damp, dark grayish brown (10YR4/2), fine-grained SAND with some silt. Sample B-17-7.5. TLV = 560 ppm. TPH = 1,711 ppm; B = 36.38; T = 215.16; E = 41.59; X = 336.15.	SP
	++	1, 1, 2	Wet, dark olive gray (5Y3/2), fine-grained SAND with some silt.	SP
			Saturated, very dark grayish brown (2.5Y3/2), fine-grained SAND with some silt.	SP
			Saturated, black (N2), fine-grained SAND with some silt.	SP
10	++	4, 4, 6	Saturated, olive gray (5Y5/2), slightly silty, fine-grained SAND. Sample B-17-10.0. No TLV. TPH < 10 ppm.	SP
		3, 6, 8	TLV < 20 ppm.	
		4, 6, 8	Saturated, olive gray (5Y5/2), slightly silty, fine- to medium-grained SAND. TLV = 50 ppm.	SP
15		3, 10, 13	Wet, strong brown (7.5YR5/8), fine-grained SAND. TLV = 1,100 ppm.	SP
			Wet, olive gray (5Y5/2), slightly silty, fine- to medium-grained SAND.	SP
		7, 12, 15	Wet, strong brown (7.5YR5/8), fine-grained SAND.	SP
			Wet, olive (5Y5/4), very fine-grained, sandy SILT. No TLV.	ML
		10, 50	Wet, olive (5Y5/3), silty, fine-grained SAND with shell fragments.	SM
		100	Wet, pale yellow (5Y7/3), silty, fine-grained SAND; zones of oxidation present.	SM
			Wet, olive (5Y5/3), fine-grained SAND.	SP
		40, 50	Wet, pale yellow (2.5Y8/4), fine- to medium-grained SAND.	SP
			Wet, light gray (5Y7/1), fine- to medium-grained SAND.	SP
20			Total Depth = 20 feet below grade. Boring converted to Monitoring Well MW-17. See well construction diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 ∇ = ground water piezometric surface measured 7/30/92

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Total Depth = 20 Feet

BORING LOG

PROJECT: ARCO STATION 1919 (600064-21) BORING DATE: 7/23/92
 LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER
 GEOLOGIST: J. GOODMACHER BORING NUMBER: B-18 / MW-18
 DRILLING COMPANY: VALLEY WELL DRILLING ELEVATION: APPROXIMATELY 10 FEET ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0			THREE HAND AUGER BORINGS DRILLED TO 6 FEET BELOW GRADE. Asphaltic concrete (8 inches). Damp, reddish brown (2.5YR4/4), clayey, sandy GRAVEL.	GC
5		6, 13, 17	Damp, dark yellowish brown (10YR4/4), fine- to medium-grained SAND.	SP
		4, 6, 8	TLV = 120 ppm. Rocks in sampler. No recovery from 6.5 to 7.5 feet. Sample B-18-7.5. TPH < 10 ppm.	
	++ ∇	1, 3, 6	Wet, dark yellowish brown (10YR4/4), fine- to medium-grained SAND. No recovery from 8.0 to 8.5 feet.	SP
10		6, 6, 7	No recovery from 9.5 to 11.0 feet.	
	++	2, 3, 6	Sample B-18-11.0. TPH < 10 ppm. Wet, black (N2), micaceous, silty, very fine-grained SAND.	SM
			Saturated, black (N2), micaceous, silty, very fine-grained SAND.	SM
15		2, 4, 7	Saturated, black (N2), micaceous, silty, very fine-grained SAND. Plant debris (roots, leaves). No TLV.	SM
20			Saturated, dark yellowish brown (10YR4/4), fine- to medium-grained SAND.	SP
			Total Depth = 20 feet below grade. Boring converted to Monitoring Well MW-18. See well construction diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

ppm = parts per million
 CG/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 ∇ = ground water piezometric surface measured 7/30/92

Page 1 of 1

Total Depth = 20 Feet

BORING LOG

PROJECT: ARCO STATION 1919 (600064-21) BORING DATE: 7/23/92
 LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: 10-INCH HOLLOW-STEM AUGER
 GEOLOGIST: J. GOODMACHER BORING NUMBER: B-19 / MW-19A
 DRILLING COMPANY: VALLEY WELL DRILLING ELEVATION: APPROXIMATELY 10 FEET ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0			THREE HAND AUGER BORINGS DRILLED TO 5.5 FEET BELOW GRADE. Asphaltic concrete (8 inches).	
			Dry, yellowish brown (10YR5/4), slightly silty, very fine-grained SAND.	SP
5		4, 4, 4	TLV = 10 ppm. Dry, dark yellowish brown (10YR4/4), fine-grained SAND.	SP
			Damp, dark yellowish brown (10YR4/4), fine-grained SAND.	SP
	++	4, 4, 4	Sample B-19-7.5. No TLV.	
	∇	1, 1, 2	TPH < 10 ppm. Rocks in sampler. No recovery from 8.0 to 8.5 feet.	SP
			Damp, dark yellowish brown (10YR4/4), fine-grained SAND.	SP
			Wet, dark yellowish brown (10YR4/4), fine-grained SAND.	SP
			Wet, black (5YR2.5/1), micaceous, silty, fine-grained SAND.	SM
10		2, 3, 3	Wet, dark yellowish brown (10YR4/4), fine-grained SAND.	SP
	++		Wet, black (5YR2.5/1), micaceous, silty, fine-grained SAND.	SM
		3, 7, 8	Sample B-19-10.5. TLV = 50 ppm. TPH < 10 ppm. Saturated, black (5YR2.5/1), micaceous, silty, fine-grained SAND.	SM
			TLV = 20 ppm.	
15		4, 7, 8	Saturated, black (N2), micaceous, silty, very fine- to fine-grained SAND. TLV = 100 ppm.	SM
			Plant debris in sampler.	
20			Saturated, yellowish brown (10YR5/4), fine- to medium-grained SAND. TLV = 140 ppm.	SP
			Total Depth = 20 feet below grade. Boring converted to Monitoring Well MW-19. See well construction diagram for details.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 ∇ = ground water piezometric surface measured 7/30/92

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Total Depth = 20 Feet

DRILLING CO.: H-F DRILLING, INC.

				DRILLING METHOD: 8-INCH HOLLOW STEM AUGER SAMPLER TYPE: SPLIT SPOON TOTAL DEPTH: APPROXIMATELY 14 FEET BELOW GRADE ELEVATION: _____ FEET ABOVE MEAN SEA LEVEL DEPTH TO GROUND WATER: APPROX. 6.5 FEET BELOW GRADE					
BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (ft)	DESCRIPTION	USCS	LITHOLOGY	BORING BACKFILL DETAIL	
				0	Asphaltic concrete 2 inches thick. Hand augered to 5 feet below grade.			0	Concrete (1 bag)
				1				1	
				2				2	
				3				3	
	100			4	Loose, moist, light olive gray (5YR 5/2), fine-grained SAND.	SP		4	
				5	Loose, moist, light olive gray (5Y 5/2), silty, fine-grained SAND. Sample B-20 - 6.	SM		5	
3,4,7	500	ND		6				6	
				7	Soft, moist, olive gray (5Y 3/2), micaceous SILT. Sample B-20 - 7.5.	ML		7	
1,1,2	2,000	421		8				8	
1,1,2	400			9	Soft, moist, black (N1), micaceous SILT, with fine-grained sand.	MH		9	
				10	Soft, moist, black (N1), micaceous SILT, with fine-grained sand. Sample B-20 - 10.5.			10	
1,2,4	100	ND		11				11	
1,2,3	75			12	Soft, moist, black (N1), micaceous SILT, with fine-grained sand.			12	
				13	Soft, moist, black (N1), micaceous SILT, with fine-grained sand.			13	
1,2,4	75			14				14	
				15				15	

**ALTON
GEOSCIENCE**
 San Diego, California

LOG OF EXPLORATORY BORING

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DATE DRILLED: OCTOBER 5, 1993

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: H-F DRILLING, INC.

BLOWS PER 6 INCHES	CGL (ppm)	TPH (ppm)	SAMPLE	DEPTH (ftg)	DRILLING METHOD: 8-INCH HOLLOW STEM AUGER		USCS	LITHOLOGY	BORING BACKFILL DETAIL	
					SAMPLER TYPE: SPLIT SPOON					
					TOTAL DEPTH: APPROXIMATELY 15 FEET BELOW GRADE					
					ELEVATION: _____ FEET ABOVE MEAN SEA LEVEL					
					DEPTH TO GROUND WATER: APPROX. 8.5 FEET BELOW GRADE					
					DESCRIPTION					
				0	Asphaltic concrete 2 inches thick. Hand augered to 5 feet below grade.				0	Concrete (1 bag)
				1					1	
				2					2	
				3					3	
				4	Loose, moist, light olive gray (5Y 5/2), silty, fine-grained SAND.		SM		4	
				5					5	
3,3,3	50	ND		6	Loose, wet, light olive gray (5YR 5/2), fine-grained SAND with silt. Sample B-21 - 6.5.		SP		6	
				7					7	
2,2,4	600	ND		8	Sample B-21 - 8.5.				8	Bentonite Grout (1.5 bags)
				9					9	
6,7,9	300	68		10	Loose, wet, black (N1), fine-grained SAND with silt. Sample B-21 - 10.				10	
				11	Loose, wet, light olive gray (5YR 5/2), fine-grained SAND with silt. Soft, moist, light brown (5Y 5/6) SILT.		ML		11	
6,8,10	100			12	Loose, wet, light gray (N7), fine-grained SAND.		SP		12	
				13	Loose, wet, light gray (N7), fine-grained SAND.				13	
6,9,10	20			14	Loose, wet, light gray (N7), fine-grained SAND.				14	
				15	Soft, moist, light brown (5Y 5/6) SILT.		ML		15	
3,19,23	25			16					16	



**ALTON
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San Diego, California

LOG OF EXPLORATORY BORING

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PROJECT NO.: 600064-10

LOCATION: ARCO STATION 1919

660 VIA DE LA VALLE,

SOLANA BEACH, CALIFORNIA


DATE DRILLED: OCTOBER 5, 1993

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: H-F DRILLING, INC.

					DRILLING METHOD: 8-INCH HOLLOW STEM AUGER		USCS	LITHOLOGY	BORING BACKFILL DETAIL
					SAMPLER TYPE: SPLIT SPOON				
					TOTAL DEPTH: APPROXIMATELY 17 FEET BELOW GRADE				
					ELEVATION: _____ FEET ABOVE MEAN SEA LEVEL				
					DEPTH TO GROUND WATER: APPROX. 10.5 FEET BELOW GRADE				
BLOWS PER 6 INCHES	CGL (ppm)	TPH (ppm)	SAMPLE	DEPTH (ftg)	DESCRIPTION				
				0	Concrete 2 inches thick. Hand augered to 5 feet below grade.				0
				1					1
				2					2
47/100				3					3
47/100				4	Dense, dry, light brown (5Y 5/6), fine-grained SAND with trace of silt.		SP		4
7,19	200			5	Loose, moist, light olive gray (5Y 5/2), fine-grained SAND.				5
7,15,20	100			6	Medium dense, moist, yellowish gray (5YR 7/2), fine-grained SAND.				6
		ND		7					7
30,54	100			8	Sample B-22 - 7.5. Medium dense, moist, yellowish gray (5YR 7/2), fine-grained SAND.				8
12,18,22	3,700			9	Medium dense, moist, light olive gray (5Y 5/2), fine-grained SAND.				9
14,21	8,000	20,116		10	Sample B-22 - 10.5. Medium dense, wet, light olive gray (5Y 5/2), fine-grained SAND.				10
14,22,30	400			11					11
		ND		12	Medium dense, wet, black (N1), fine-grained SAND.				12
6,18	100			13	Sample B-22 - 13. Loose, wet, medium gray (N5), fine-grained SAND.				13
6,11,17	100			14					14
				15	Loose, wet, light brown (5Y 5/6), fine-grained SAND.				15
	100			16	Loose, wet, light brown (5Y 5/6), fine-grained SAND.				16
				17					17
				18					18



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GEOSCIENCE

San Diego, California

LOG OF EXPLORATORY BORING

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TEST BORING LOG

TYPE						10" Hollow Stem Auger		ELEVATION ~16.0 feet		BORING B-22	
STRIKE/DIP and other DEPTH-SPECIFIC NOTES	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS/FOOT	SAMPLE SIZE (inches)	SAMPLE NO.	DEPTH (feet)	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	CONCRETE: 4 inches		
									FILL: Orange brown, fine SILTY SAND		
									... concrete slab from 2.5 to 3 feet		
									TORREY SANDSTONE: Orange brown, fine to medium, moderately indurated SILTY SANDSTONE		
									Gray green, fine to medium, friable SANDSTONE with a trace of SILT		
									... color change to light green		
									... concretions to 2 inch diameter		
									... black staining (gasoline)		
									Brown, fine to medium, moderately indurated SILTY SANDSTONE		
									Mottled gray green and orange brown, fine to medium, moderately indurated SILTY SANDSTONE with scattered concretions to 1 inch diameter		
									Notes:		
									1. Total depth of boring is 17 feet.		
									2. Groundwater encountered at 10.5 feet during drilling.		
									3. No caving.		
									4. Boring backfilled by Alton Geoscience.		
									THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.		
									LOGGED BY JJV		DATE 10-5-93

PROJECT NO.: 600064-10

LOCATION: ARCO STATION 1919

660 VIA DE LA VALLE,

SOLANA BEACH, CALIFORNIA

DATE DRILLED: OCTOBER 5, 1993

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: H-F DRILLING, INC.

DRILLING METHOD: 8-INCH HOLLOW STEM AUGER

SAMPLER TYPE: SPLIT SPOON

TOTAL DEPTH: APPROXIMATELY 13.5 FEET BELOW GRADE

ELEVATION: FEET ABOVE MEAN SEA LEVEL

DEPTH TO GROUND WATER: APPROX. 10.5 FEET BELOW GRADE

DESCRIPTION

BLOWS PER
6 INCHES

CGI (ppm)

TPH (ppm)

SAMPLE

DEPTH (ft)

USCS

LITHOLOGY

BORING
BACKFILL
DETAILAsphaltic concrete 2 inches thick.
Hand augered to 5 feet below grade.Medium dense, moist, yellowish gray (5Y 7/2), fine-grained SAND
with trace of silt.Medium dense, moist, yellowish gray (5Y 7/2), fine-grained SAND.
Sample B-23 - 8.5.Loose, moist, light brown (5Y 5/6), fine-grained SAND.
Sample B-23 - 10.Loose, wet, light brown (5Y 5/6), fine-grained SAND.
Sample B-23 - 11.

Loose, wet, light brown (5Y 5/6), fine-grained SAND.

Dense, moist, yellowish gray (5Y 7/2), cemented, fine-grained SAND.
Refusal at 13.5 feet below grade.Concrete
(1 bag)Bentonite
Grout
(1.5 bags)ALTON
GEOSCIENCE
San Diego, California

LOG OF EXPLORATORY BORING

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PROJECT NO.: 600064-10

LOCATION: ARCO STATION 1919

660 VIA DE LA VALLE,

SOLANA BEACH, CALIFORNIA

DATE DRILLED: OCTOBER 5, 1993

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: H-F DRILLING, INC.

BLOWS PER 6 INCHES	CGL (ppm)	TPH (ppm)	SAMPLE	DEPTH (ftg)	DRILLING METHOD: 8-INCH HOLLOW STEM AUGER		USCS	LITHOLOGY	BORING BACKFILL DETAIL
					SAMPLER TYPE: SPLIT SPOON	DESCRIPTION			
				0	Asphaltic concrete 2 inches thick. Hand augered to 5 feet below grade.				0
				1					1
				2					2
				3					3
				4					4
9,12,16	25			5	Loose, moist, light gray (N7), fine-grained SAND.		SP		5
				6					6
				7					7
7,12,15	50	ND		8	Loose, moist, yellowish gray (5Y 7/2), fine-grained SAND. Sample B-24 - 8.5.				8
				9					9
10,14,21	5,000			10	Medium dense, wet, light gray (N7), fine-grained SAND. Medium dense, wet, olive gray (5Y 3/2) and black (N1), fine-grained SAND. Sample B-24 - 10.5.				10
				11					11
13,21,20	6,000			12	Medium dense, wet, light gray (N7), fine-grained SAND. Sample B-24 - 12.5.				12
				13					13
20,24,20	800	20		14	Medium dense, wet, light gray (N7), fine-grained SAND.				14
				15					15
17,20,22				16	Medium dense, wet, very pale orange (10YR 8/2), fine-grained SAND.				16
				17					17
13,14,22				18					18



**ALTON
GEOSCIENCE**
San Diego, California

LOG OF EXPLORATORY BORING

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PROJECT NO.: 600064-10

LOCATION: ARCO STATION 1919

660 VIA DE LA VALLE,

SOLANA BEACH, CALIFORNIA

DATE DRILLED: OCTOBER 5, 1993

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: H-F DRILLING, INC.

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (ftg)	DRILLING METHOD: 8-INCH HOLLOW STEM AUGER SAMPLER TYPE: SPLIT SPOON TOTAL DEPTH: APPROXIMATELY 13.5 FEET BELOW GRADE ELEVATION: FEET ABOVE MEAN SEA LEVEL DEPTH TO GROUND WATER: APPROX. 10.5 FEET BELOW GRADE DESCRIPTION	USCS	LITHOLOGY	BORING BACKFILL DETAIL
				0	Concrete 2 inches thick. Hand augered to 5 feet below grade.			Concrete (1 bag)
13, 15, 26				1				
				2				
				3				
				4	Medium dense, moist, grayish yellow (5Y 8/4), fine-grained SAND.	SP		
				5				
				6				
				7				
24, 50/4"	0	ND		8	Very dense, dry, very pale orange (10YR 8/2), cemented, fine-grained SAND. Sample B-25 - 8.			Bentonite Grout (1.5 bags)
9, 13, 15	25			9	Medium dense, wet, yellowish gray (5Y 7/2), fine-grained SAND.			
7, 18	20	ND		10	Medium dense, wet, yellowish gray (5Y 7/2), fine-grained SAND. Sample B-25 - 10.5.			
6, 10, 11	25	ND		11	Medium dense, wet, yellowish gray (5Y 7/2), fine-grained SAND.			
				12	Sample B-25 - 12.			
7, 11	20			13	Medium dense, wet, pale yellowish orange (10YR 8/6), fine-grained SAND with trace fine gravel.			
				14				










**ALTON
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San Diego, California

LOG OF EXPLORATORY BORING

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PAGE 1 OF 1

TEST BORING LOG

10" Hollow Stem Auger							ELEVATION ~16.0 feet		BORING B-25																														
Sample Disturbed	109	5.4	24	2.5	1	1		SM	CONCRETE: 4 inches																														
									FILL: Light brown, fine to medium SILTY SAND																														
									111	4.5	100	2.5	3	2		TORREY SANDSTONE: Orange brown, fine to medium, moderately indurated SILTY SANDSTONE																							
																117	14.2	25	2.5	5		Light brown, fine to medium, moderately indurated SILTY SANDSTONE with fine GRAVEL																	
																						... concretion at 8.5 feet																	
																						28	1.4	4		Gray green, fine to medium, friable SANDSTONE with a trace of SILT													
																										21	1.4	6		... concretions to 2 inch diameter									
																														18	2.5	7		... color change to orange brown					
																																		100+	1.4	8		Brown, fine to medium, moderately indurated SILTY SANDSTONE	
																																						Notes:	
																																						1. Total depth of boring is 14 feet.	
																																						2. Groundwater encountered at 10.5 feet during drilling.	
																																						3. No caving.	
																																						4. Boring backfilled by Alton Geoscience.	
THIS BORING LOG SUMMARY APPLIES ONLY AT THE TIME AND LOCATION INDICATED. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND TIMES.																																							
LOGGED BY JJV		DATE 10-5-93																																					

PROJECT NO.: 600064-10

LOCATION: ARCO STATION 1919

660 VIA DE LA VALLE,

SOLANA BEACH, CALIFORNIA

DATE DRILLED: OCTOBER 5, 1993

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: H-F DRILLING, INC.

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (ft)	DRILLING METHOD: 8-INCH HOLLOW STEM AUGER		USCS	LITHOLOGY	BORING BACKFILL DETAIL
					SAMPLER TYPE: SPLIT SPOON				
					TOTAL DEPTH: APPROXIMATELY 11 FEET BELOW GRADE				
					ELEVATION: _____ FEET ABOVE MEAN SEA LEVEL				
					DEPTH TO GROUND WATER: APPROX. 8 FEET BELOW GRADE				
					DESCRIPTION				
				0	Asphaltic concrete 2 inches thick. Hand augered to 5 feet below grade.				0
				1					1
				2					2
				3					3
	100		NR	4	Loose, moist, light olive gray (5YR 5/2), fine-grained SAND with silt.		SP		4
3.1,2				5	Loose, moist, black (N1), fine-grained SAND with silt.				5
	220	ND		6	Sample B-26 - 6.				6
1.1,1				7	Loose, moist to wet, black (N1), silty, fine-grained SAND. Sample B-26 - 7.5.		SM		7
	3,000	13,531		8	Loose, wet, black (N1), silty, fine-grained SAND.				8
2.18				9					9
	1,000			10	Soft, moist, black (N1), SILT. Sample B-26 - 10.5.		ML		10
1.1,1			14	11					11
	400			12					12
				13					13
				14					14
				15					15



**ALTON
GEOSCIENCE**
San Diego, California

LOG OF EXPLORATORY BORING

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PROJECT NO.: 600064-10

LOCATION: ARCO STATION 1919

660 VIA DE LA VALLE,

SOLANA BEACH, CALIFORNIA

DATE DRILLED: OCTOBER 5, 1993

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: H-F DRILLING, INC.

DRILLING METHOD: 8-INCH HOLLOW STEM AUGER

SAMPLER TYPE: SPLIT SPOON

TOTAL DEPTH: APPROXIMATELY 11 FEET BELOW GRADE

ELEVATION: _____ FEET ABOVE MEAN SEA LEVEL

DEPTH TO GROUND WATER: APPROX. 7.5 FEET BELOW GRADE

DESCRIPTION

BLOWS PER
6 INCHES

CGL (ppm)

TPH (ppm)

SAMPLE

DEPTH (ft)

USCS

LITHOLOGY

BORING
BACKFILL
DETAILAsphaltic concrete 2 inches thick.
Hand augered to 5 feet below grade.

Loose, moist, light olive gray (5YR 5/2), fine-grained SAND with trace silt.

Loose, moist, black (N1), silty, fine-grained SAND.

Sample B-27 - 6.

Soft, moist, black (N1), SILT.

Sample B-27 - 7.5.

Soft, moist, black (N1), SILT.

Soft, moist, black (N1), SILT.

Sample B-27 - 10.5.

SP

SM

ML

Concrete
(1 bag)Bentonite
Grout
(1 bag)
**ALTON
GEOSCIENCE**
San Diego, California

LOG OF EXPLORATORY BORING

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ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 9/26/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: HAND AUGER

GEOLOGIST: J. MEYER / J. GOODMACHER BORING NUMBER: PL-1

DRILLING COMPANY: ALTON GEOSCIENCE ELEVATION: APPROXIMATELY 10 FEET ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0				
5	++		Dry to slightly damp, tan to gray, slightly clayey, micaceous, fine- to medium-grained SAND. Sample PL1-5. CGI = 5% LEL. TPH = 3,200 ppm.	SP
	++		Slightly damp to damp, dark to moderate brown, fine- to medium-grained SAND. Sample PL1-9. CGI = 17% LEL. TPH = 21,000 ppm.	SP
10			Total depth = 9 feet below grade. Boring was grouted from total depth to surface with concrete/bentonite grout.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 ∇ = ground water piezometric surface

Page 1 of 1

Total Depth = 9 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919

BORING DATE: 9/26/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH

BORING TYPE: HAND AUGER

GEOLOGIST: J. MEYER / J. GOODMACHER

BORING NUMBER: PL-2

DRILLING COMPANY: ALTON GEOSCIENCE

APPROXIMATELY 10 FEET
ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0				
5	++		Dry to slightly damp, tan to gray, slightly clayey, micaceous, fine- to medium-grained SAND. Sample PL2-5. CGI = 100 ppm. TPH < 10 ppm.	SP
	++		Dry to slightly damp, tan to gray, slightly clayey, micaceous, fine- to medium-grained SAND. Sample PL2-9. CGI = 240 ppm. TPH < 10 ppm.	SP
10			Total depth = 9 feet below grade. Boring was grouted from total depth to surface with concrete/bentonite grout.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 ∇ = ground water piezometric surface

Page 1 of 1

Total Depth = 9 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 9/26/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: HAND AUGER

GEOLOGIST: J. MEYER / J. GOODMACHER BORING NUMBER: PL-3

DRILLING COMPANY: ALTON GEOSCIENCE ELEVATION: APPROXIMATELY 10 FEET ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0				
5	++		Dry to slightly damp, tan to gray, slightly clayey, micaceous, fine- to medium-grained SAND. Sample PL3-5. CGI = 0 ppm. TPH = < 10 ppm.	SP
	++		Slightly damp, tan to gray, slightly oxidized, fine- to medium-grained SAND. Sample PL3-9. CGI = 95% LEL. TPH = 7,600 ppm.	SP
10			Total depth = 9 feet below grade. Boring was grouted from total depth to surface with concrete/bentonite grout.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 V = ground water piezometric surface

Page 1 of 1

Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

Total Depth = 9 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 9/26/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: HAND AUGER

GEOLOGIST: J. MEYER / J. GOODMACHER BORING NUMBER: PL-4

DRILLING COMPANY: ALTON GEOSCIENCE ELEVATION: APPROXIMATELY 10 FEET ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0				
5	++		Moist, gray, slightly silty, very fine- to fine-grained SAND. Sample PL4-5. CGI = 450 ppm. TPH < 10 ppm.	SP
10	++		Moist, gray, slightly silty, very fine- to fine-grained SAND. Sample PL4-9. CGI = 40% LEL. TPH = 7,800 ppm.	SP
			Total depth = 9 feet below grade. Boring was grouted from total depth to surface with concrete/bentonite grout.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 √ = ground water piezometric surface

Page 1 of 1

Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

Total Depth = 9 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 9/26/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: HAND AUGER

GEOLOGIST: J. MEYER / J. GOODMACHER BORING NUMBER: PL-5
 APPROXIMATELY 10 FEET

DRILLING COMPANY: ALTON GEOSCIENCE ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0				
5	++		Slightly damp, gray orange, slightly silty, very fine- to fine-grained SAND. Sample PL5-5. CGI = 0 ppm. TPH < 10 ppm.	SP
	++		Damp, orange, silty, slightly coarse, very fine- to medium-grained SAND. Sample PL5-9. CGI = 15% LEL. TPH = 240 ppm.	SM
10			Total depth = 9 feet below grade. Boring was grouted from total depth to surface with concrete/bentonite grout.	

NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 V = ground water piezometric surface

Page 1 of 1

Total Depth = 9 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: ARCO STATION 1919 BORING DATE: 9/26/90

LOCATION: 660 VIA DE LA VALLE, SOLANA BEACH BORING TYPE: HAND AUGER

GEOLOGIST: J. MEYER / J. GOODMACHER BORING NUMBER: PL-6
 APPROXIMATELY 10 FEET

DRILLING COMPANY: ALTON GEOSCIENCE ELEVATION: ABOVE MEAN SEA LEVEL

DEPTH (feet)	I	BLOW CTS.	MATERIAL ENCOUNTERED	USCS
0				
1				
2				
3				
4				
5	++	I	Slightly damp, gray, silty, very fine- to fine-grained SAND. Sample PL6-5. CGI = 25% LEL. TPH = 800 ppm.	SM
6				
7				
8	++	I	Damp, gray, silty, very fine- to medium-grained SAND. Sample PL6-9. CGI = 350 ppm. TPH = 150 ppm.	SM
9				
10			Total depth = 9 feet below grade. Boring was grouted from total depth to surface with concrete/bentonite grout.	
11				
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30				

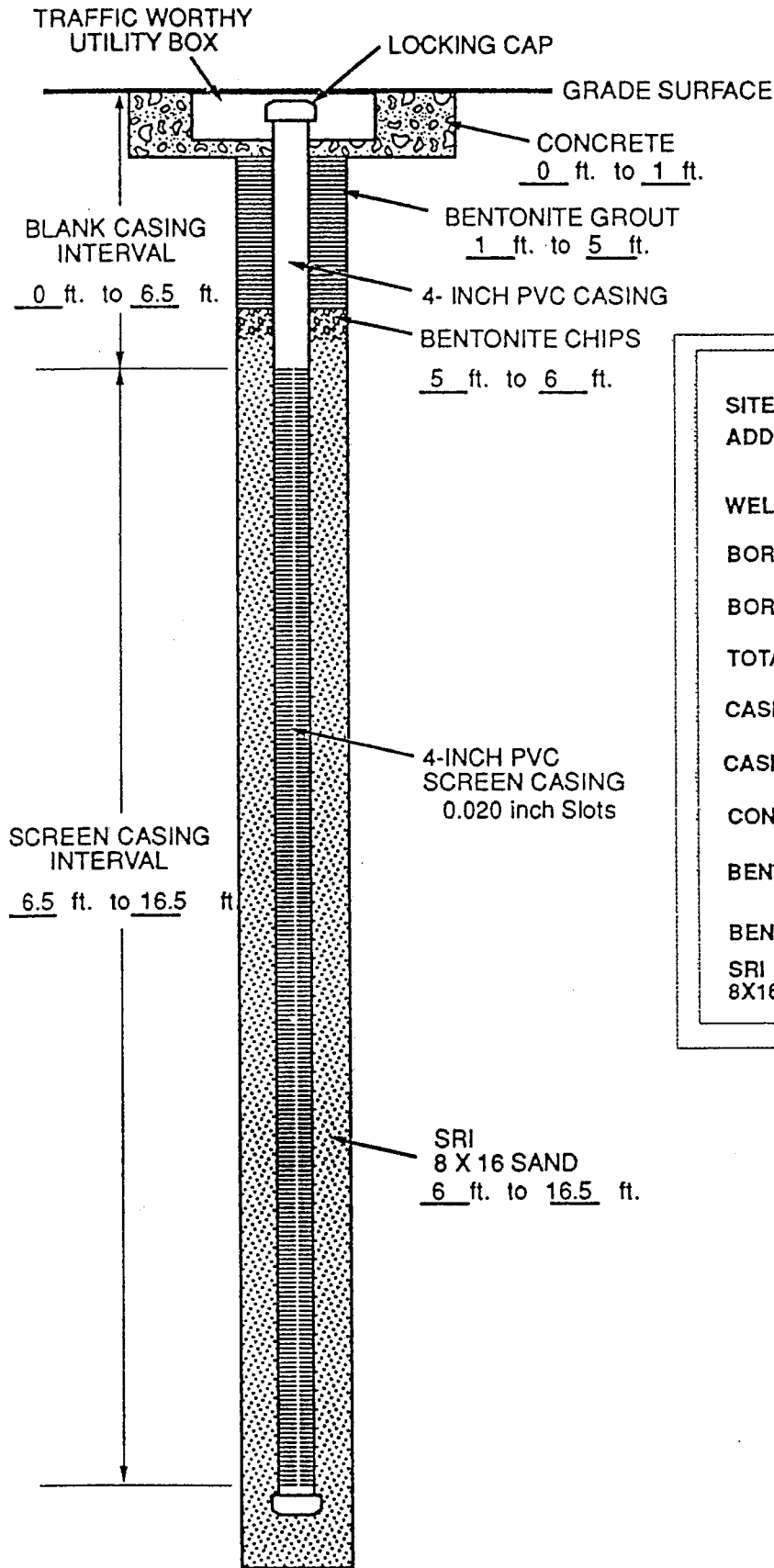
NOTES: TPH = total petroleum hydrocarbons
 TRPH = total recoverable petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 ND = not detected at laboratory detection limits
 Well elevations are measured to top of casing.
 Characters in parentheses represent Munsell color code designations.

ppm = parts per million
 CGI/TLV = combustible gas reading
 I = sampling interval
 LEL = lower explosive limit
 ++ = sample analyzed for hydrocarbons
 √ = ground water piezometric surface

Page 1 of 1





Total Depth = 9 Feet

WELL CONSTRUCTION DETAIL



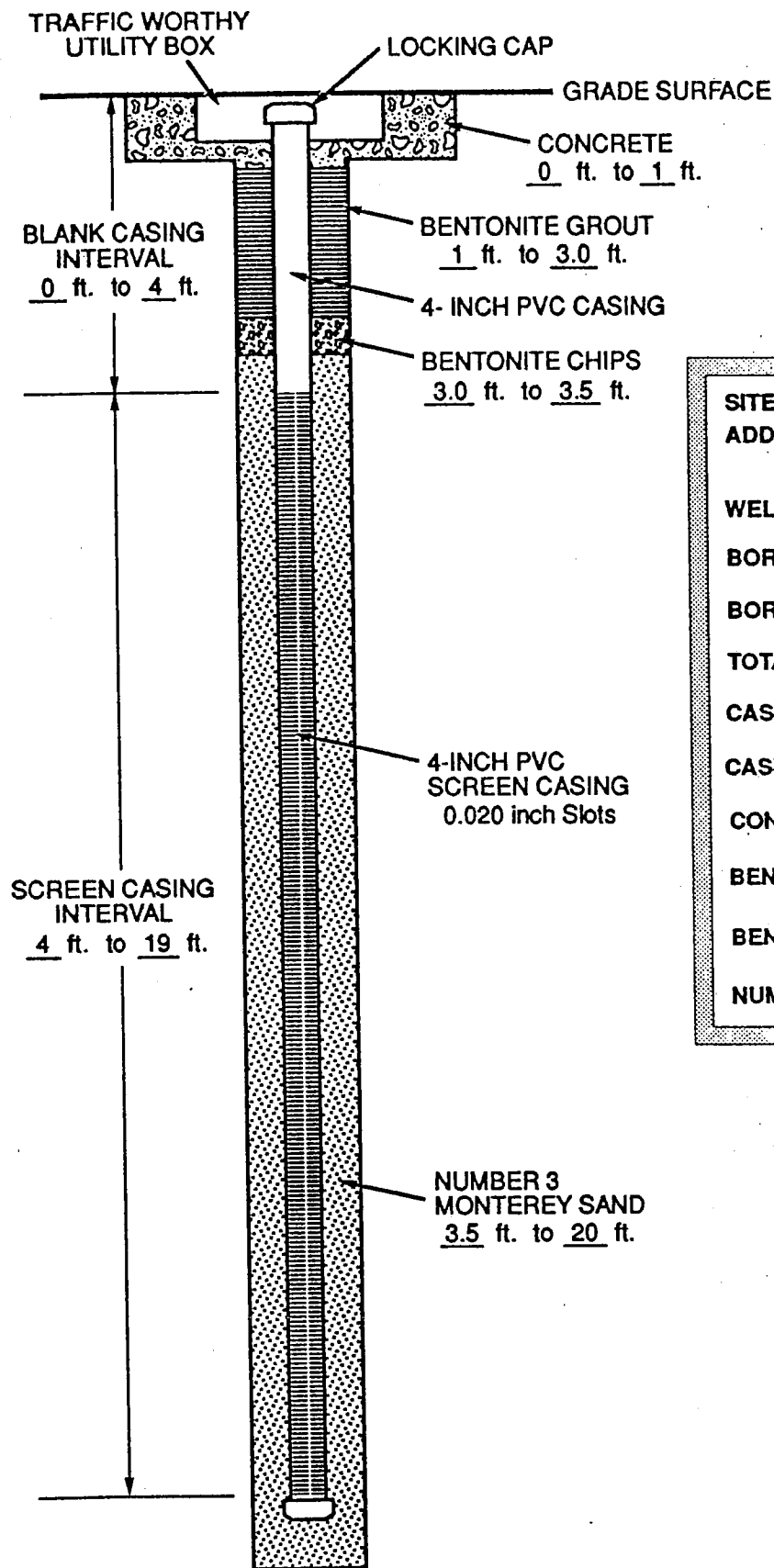
SITE:	ARCO STATION 1919
ADDRESS:	660 Via de la Valle Solana Beach, California
WELL NUMBER:	MW-15
BORING DATE:	02/13/92
BORING DIAMETER:	10 in.
TOTAL BORING DEPTH:	16.5 ft.
CASING DIAMETER:	4 in.
CASING/SCREEN DEPTH:	16.5 ft.
CONCRETE:	2 bags
BENTONITE GROUT:	2 bags
BENTONITE CHIPS:	1 bags
SRI 8X16 SAND	5 bags

LEGEND

-  CONCRETE
-  BENTONITE GROUT
-  BENTONITE CHIPS
-  FILTER PACK
SRI 8X16 SAND



WELL CONSTRUCTION DETAIL



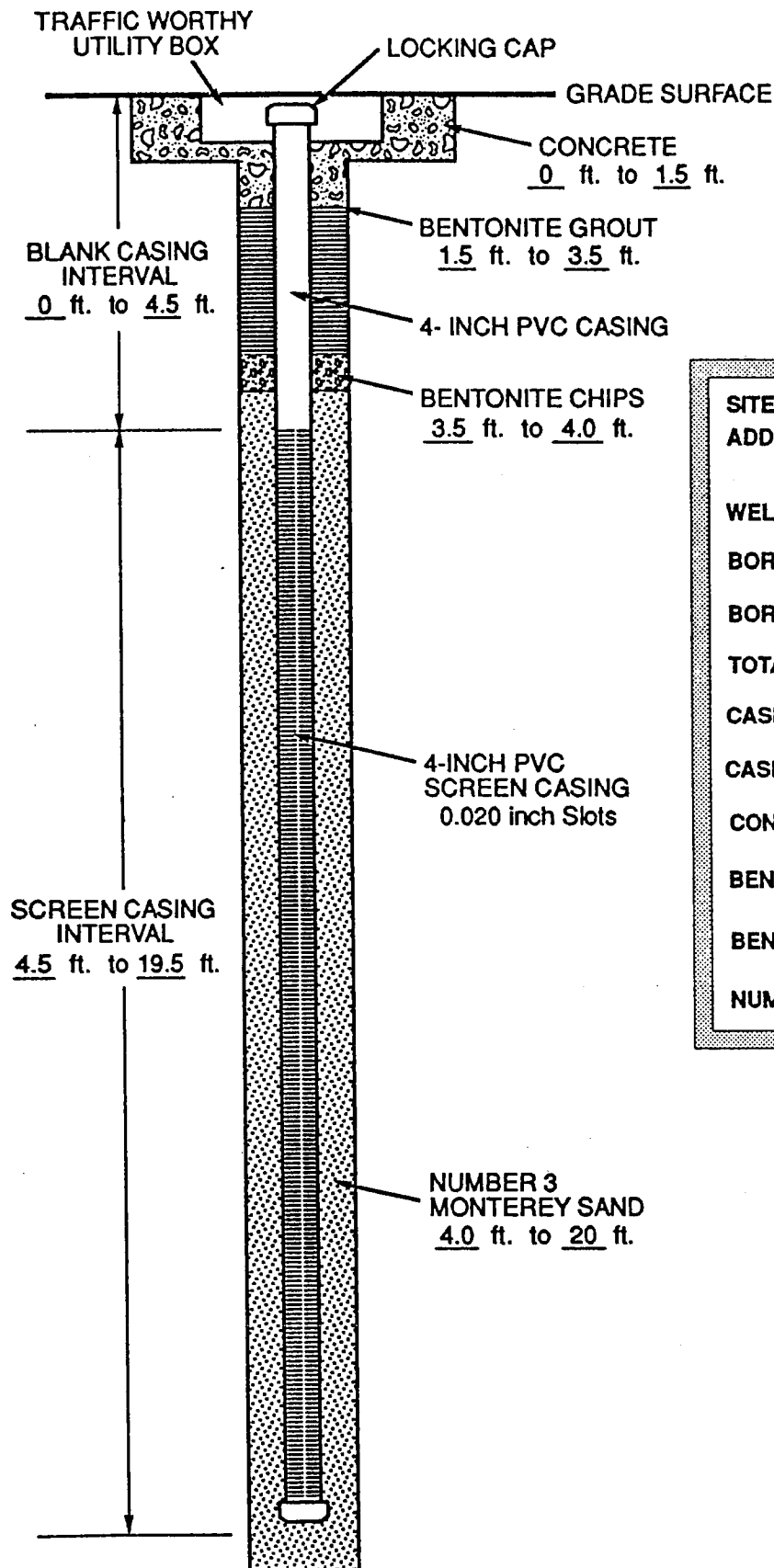
SITE:	ARCO STATION 1919
ADDRESS:	660 Via de la Valle Solana Beach, California
WELL NUMBER:	MW-17
BORING DATE:	7/22/92
BORING DIAMETER:	10 in.
TOTAL BORING DEPTH:	20 ft.
CASING DIAMETER:	4 in.
CASING/SCREEN DEPTH:	19 ft.
CONCRETE:	2 bags
BENTONITE GROUT:	1 bag
BENTONITE CHIPS:	0.5 bag
NUMBER 3 SAND:	7 bags

LEGEND

	CONCRETE
	BENTONITE GROUT
	BENTONITE CHIPS
	FILTER PACK (NUMBER 3 MONTEREY SAND)

NOTE: DRAWING IS NOT TO SCALE

WELL CONSTRUCTION DETAIL



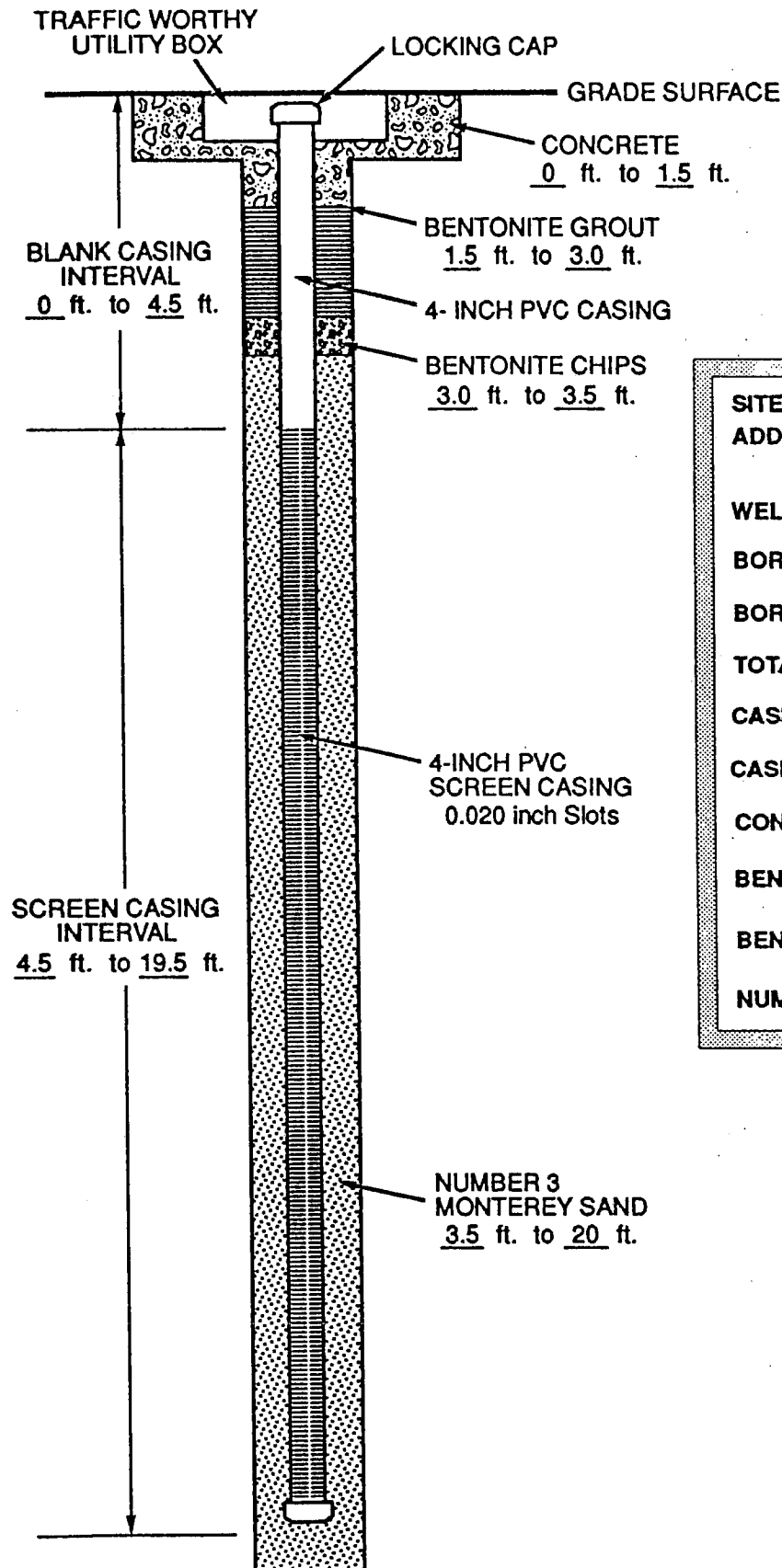
SITE:	ARCO STATION 1919
ADDRESS:	660 Via de la Valle Solana Beach, California
WELL NUMBER:	MW-18
BORING DATE:	7/23/92
BORING DIAMETER:	10 in.
TOTAL BORING DEPTH:	20 ft.
CASING DIAMETER:	4 in.
CASING/SCREEN DEPTH:	19.5 ft.
CONCRETE:	2 bags
BENTONITE GROUT:	1 bag
BENTONITE CHIPS:	0.5 bag
NUMBER 3 SAND:	7.5 bags

LEGEND

	CONCRETE
	BENTONITE GROUT
	BENTONITE CHIPS
	FILTER PACK (NUMBER 3 MONTEREY SAND)

NOTE: DRAWING IS NOT TO SCALE

WELL CONSTRUCTION DETAIL



SITE:	ARCO STATION 1919
ADDRESS:	660 Via de la Valle Solana Beach, California
WELL NUMBER:	MW-19
BORING DATE:	7/23/92
BORING DIAMETER:	10 in.
TOTAL BORING DEPTH:	20 ft.
CASING DIAMETER:	4 in.
CASING/SCREEN DEPTH:	19.5 ft.
CONCRETE:	2 bags
BENTONITE GROUT:	1 bag
BENTONITE CHIPS:	0.5 bag
NUMBER 3 SAND:	7.5 bags

LEGEND

	CONCRETE
	BENTONITE GROUT
	BENTONITE CHIPS
	FILTER PACK (NUMBER 3 MONTEREY SAND)

NOTE: DRAWING IS NOT TO SCALE



PROJECT NO.: 600064-52

LOCATION: ARCO STATION 1919

660 VIA DE LA VALLE,

SOLANA BEACH, CALIFORNIA

DATE DRILLED: APRIL 13 1994

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: WEST HAZMAT DRILLING

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (ftg)	DRILLING METHOD: 10-INCH-DIAMETER HOLLOW STEM AUGER	USCS	LITHOLOGY	WELL CONSTRUCTION DETAIL
					SAMPLER TYPE: 2-INCH-DIAMETER SPLIT-SPOON			
					TOTAL BORING DEPTH: APPROX. 16 FEET BELOW GRADE			
					ELEVATION: 16.82 FEET ABOVE MEAN SEA LEVEL			
					DEPTH TO GROUND WATER: APPROX. 10.5 FBG ON 4-13-94			
					DESCRIPTION			
				0	Hand excavated to approximately 5 feet below grade. Asphaltic concrete 3 inches thick.			Standard cover with locking cap
				1	TORREY SANDSTONE.			Concrete (1 bag)
				2	Dense, moist, very pale orange (10YR 8/2), gravelly, cobbly, fine-grained SAND.	SP		2-inch- diameter Schedule 40 PVC casings
				3				Bentonite Grout (0.5 bag)
				4				Bentonite Chips (1 bag)
75/5*	20			5	Very dense, moist, very pale orange (10YR 8/2), fine-grained SAND.			
				6				
				7				
10,18,21	15	ND		8	Dense, moist, very pale orange (10YR 8/2), fine-grained SAND, trace silt. Sample MW-19 - 8.			2-inch- diameter Schedule 40 PVC casing with 0.020- inch slotting
60,13,40	20			9	As above.			
		ND		10	Sample MW-19 - 10.			
14,19,25	>10,000			11	Medium dense, wet, black (N1), fine-grained SAND, trace silt. Sample MW-19 - 11.5.			No. 3 Montarey Sand (5 bags)
		5,763		12	Medium dense, wet, black (N1), fine-grained SAND. Sample MW-19 - 12.5. B = ND, T = ND, E = 104 ppm, X = 428.5 ppm.			
7,10,17	>10,000			13				
		9,379		14				
				15	Very dense, wet, very pale orange (10YR 8/2), fine-grained SAND. Sample MW-19 - 15.5.			
32,50	20	ND		16	Refusal at 16.			End cap
				17				



**ALTON
GEOSCIENCE**
San Diego, California

LOG OF EXPLORATORY BORING

MW-19B

PAGE 1 OF 1

PROJECT NO.: 600064-52

LOCATION: ARCO STATION 1919

660 VIA DE LA VALLE,

SOLANA BEACH, CALIFORNIA

DATE DRILLED: APRIL 13 1994

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: WEST HAZMAT DRILLING

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (fbg)	DRILLING METHOD: 10-INCH-DIAMETER HOLLOW STEM AUGER	USCS	LITHOLOGY	WELL CONSTRUCTION DETAIL
					SAMPLER TYPE: 2-INCH-DIAMETER SPLIT-SPOON			
					TOTAL BORING DEPTH: APPROX. 20 FEET BELOW GRADE			
					ELEVATION: 13.38 FEET ABOVE MEAN SEA LEVEL			
					DEPTH TO GROUND WATER: APPROX. 8 Fbg ON 4-13-94			
					DESCRIPTION			
				0	Hand excavated to approximately 5 feet below grade. Asphaltic concrete 3 inches thick.			Standard cover with locking cap
				1	Fill.			Concrete (1 bag)
				2	Medium dense, moist, very pale orange (10YR 8/2), fine-grained SAND.	SP		2-inch- diameter Schedule 40 PVC casings
				3				Bentonite Grout (0.5 bag)
				4	QUATERNARY ALLUVIUM.			Bentonite Chips (1 bag)
8,4,5				5	As above.			
		ND		6	Sample MW-20 - 6.			
1,1,2				7	Loose, moist, moderate brown (5YR 4/4), silty SAND. Sample MW-20 - 7.5.	SM		
		ND		8	As above, wet.			2-inch- diameter Schedule 40 PVC casing with 0.020- inch slotting
		2,593		9	Sample MW-20 - 9.			
				10				
				11				
3,3,4				12				
				13	Soft, wet, black (N1), SILT.	ML		
				14				No. 3 Monterey Sand (6 bags)
3,4,5		ND		15	Loose, wet, light gray (N7), silty, fine-grained SAND. Sample MW-20 - 15.	SM		
				16				
				17				
				18				
				19				
2,3,4				20	Loose, wet, light gray (N7), fine-grained SAND, with silt.	SP		End cap



**ALTON
GEOSCIENCE**
San Diego, California

LOG OF EXPLORATORY BORING

MW-20

PAGE 1 OF 1

PROJECT NO.: 600064-52

LOCATION: ARCO STATION 1919

660 VIA DE LA VALLE,

SOLANA BEACH, CALIFORNIA

DATE DRILLED: APRIL 13 1994

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: WEST HAZMAT DRILLING

BLOWS PER 6 INCHES	CGL (ppm)	TPH (ppm)	SAMPLE	DEPTH (ft)	DRILLING METHOD: 10-INCH-DIAMETER HOLLOW STEM AUGER	USCS	LITHOLOGY	WELL CONSTRUCTION DETAIL
					SAMPLER TYPE: 2-INCH-DIAMETER SPLIT-SPOON			
					TOTAL BORING DEPTH: APPROX. 14 FEET BELOW GRADE			
					ELEVATION: 13.78 FEET ABOVE MEAN SEA LEVEL			
					DEPTH TO GROUND WATER: APPROX. 8 FBG ON 4-13-94			
					DESCRIPTION			
				0	Hand excavated to approximately 5 feet below grade. Asphaltic concrete 3 inches thick.			Standard cover with locking cap
				1	TORREY SANDSTONE.			Concrete (1 bag)
				2	Dense, moist, light brown (5YR 5/6), fine-grained SAND, trace silt.	SP		2-inch- diameter Schedule 40 PVC casings
				3				Bentonite Grout (0.5 bag)
				4				Bentonite Chips (1 bag)
10,16,33	20			5	Dense, moist, very pale orange (10YR 8/2), fine-grained SAND, trace silt.			
				6				
				7				
15,31,46	25	ND		8	Dense, wet, light brown (5YR 5/6), fine-grained SAND, trace silt. Sample MW-21 - 7.5.			2-inch- diameter Schedule 40 PVC casing with 0.020- inch slotting
	>10,000	13,460		9	Medium dense, wet, black (N1), fine-grained SAND, with silt. Sample MW-21 - 8.5. B = 28.2 ppm, T = 182.1 ppm, E = 116.9 ppm, X = 783.6 ppm.			
8,9,12	750			10				
				11				
32,41,50	5	29		12	Dense, wet, very pale orange (10YR 8/2), fine-grained SAND, trace silt. Sample MW-21 - 12.			No. 3 Monterey Sand (5 bags)
				13				
				14				End cap
				15				
				16				
				17				



**ALTON
GEOSCIENCE**
San Diego, California

LOG OF EXPLORATORY BORING

MW-21

PAGE 1 OF 1

SECOR

BOREHOLE / WELL LOG

Number:

MW-22

Client:

ARCO

Job No:

008.60073

Sheet:

1 of 1

Location:

Arco Facility No. 1919
660 Via de la Valle
Solana Beach, CA

Drilling Company/Driller:

Tri-County Drilling Inc./
Daniel Nichols

SECOR Rep:

S. Levin

Approved by:

Date Started:

7/11/00

Date Finished:

7/11/00

Drill Rig/Sampling Method:

CME-75 with Hollow Stem Augers/CA Split Spoon
Sampler with Sleeves

Borehole Dia.:

8"

Casing Dia.:

2"

Surface Elevation:

9.81

SAMPLE LOG

BOREHOLE LOG

WELL LOG

Sample Number	OVA/PID (ppm)	Lab Results TPHg(ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, Color, grain, minor soil component, moisture, density, odor, etc.)	Well Design
				0			6" Asphalt, 6" Base	
				1	SW		Well graded SAND, dark yellowish brown (10YR 4/6), fine to coarse grained sand, trace of silt (<10%), dry, loose, no Hydrocarbon (HC) odor.	
				2				
				3				
				4	SM			
MW-22/5'	1.8	<10	1 1/2	5			Silty SAND, dark reddish brown (5YR 3/2), fine grained sand, with occasional medium grained sand, silt (15-20%), trace clay (<15%), moist, loose, no HC odor.	
				6				
				7				
				8				
				9				
MW-22/10'	0.8	<10	4 3/2	10	ML		Sandy SILT, black (5Y 2.5/1), 60% silt, 40% fine grained sand, wet, firm to stiff, no HC odor.	
				11				
				12				
				13				
				14	SP		Poorly graded SAND, dark greenish gray (GLEYS 3/1), fine to medium grained sand, silt (10%), wet, medium dense, slight odor (hydrogen sulfide).	
MW-22/15'	NA	--	4 6/15	15				
				16				
				17				
				18				
				19				
MW-22/20'	0.6	--	5 7/10	20			Strong odors (organic/hydrogen sulfide).	
				21				
				22				
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				25				
				26				
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SECOR

BOREHOLE / WELL LOG

Number:

MW-23

Client:

ARCO

Job No:

008.60073

Sheet:

1 of 1

Location:

Arco Facility No. 1919
660 Via de la Valle
Solana Beach, CA

Drilling Company/Driller:

Tri-County Drilling Inc./
Daniel Nichols

SECOR Rep:

S. Levin

Approved by:

Date Started:

7/11/00

Date Finished:

7/11/00

Drill Rig/Sampling Method:

CME-75 with Hollow Stem Augers/CA Split Spoon
Sampler with Sleeves

Borehole Dia.:

8"

Casing Dia.:

2"

Surface Elevation:

12.45

SAMPLE LOG

BOREHOLE LOG

WELL LOG

Sample Number	OVA/PID (ppm)	Lab Results TPHg(ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, Color, grain, minor soil component, moisture, density, odor, etc.)	Well Design
				0			6" Asphalt, 6" Base	
				1	SW		Well graded SAND, dark yellowish brown (10YR 4/4), fine to coarse grained sand, silt (5-10%), dry, no Hydrocarbon (HC) odor.	
				2				
				3				
				4	SM		Silty SAND, very dark gray (5YR 3/1), fine grained sand, silt (25-30%), moist, medium dense, no odors.	
MW-23/5'	0.6	<10	5/6/13	5				
				6				
				7				
				8				
				9				
MW-23/10'	2.0	<10	1/2/2	10	ML		Sandy SILT, black (5Y 2.5/1), 60% silt, fine grained sand (30%), trace clay, wet, soft, no odors.	
				11				
				12				
				13				
				14	SP		Poorly graded SAND, black (5Y 2.5/1), fine grained sand, silt (10-15%), wet, soft, no odors.	
MW-23/15'	0.2	--	1/1/2	15				
				16				
				17				
				18				
				19				
MW-23/20'	0	--	8/20/24	20			Becomes dense to very dense.	
				21				
				22				
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TOTAL DEPTH = 20.5 FEET BGS

Borehole completed as 2" diameter PVC
Monitoring well with 0.020" slotted screen,
with 6 bags of #3 Monterey Sand from 4' - 20.5'
bgs, 1 bag of Bentonite seal from 2' - 4' bgs and
capped with concrete and traffic rated well box.

SECOR

BOREHOLE / WELL LOG

Number:

MW-24

 Client:
ATLANTIC RICHFIELD COMPANY

 Job No:
008.01919.03

 Sheet:
1 of 1

 Location:
Arco Facility #1919
660 Via de la Valle
Solana Beach, CA 92075
Well at: 2260 Jimmy Durante Blvd, Del Mar, CA

 Drilling Company/Driller:
West Hazmat Drilling Company/
Robert Suffle

 SECOR Rep:
M. Garrett/C. Rodriguez

 Approved by:
Brad Eisenberg

 Date Started:
10-1-03

 Date Finished:
10-1-03

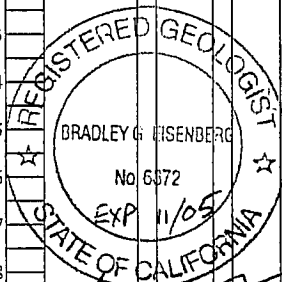
 Drill Rig/Sampling Method:
CME-75 with Hollow Stem Auger/ CA Split Spoon
Sampler with Sleeves

 Borehole Dia.:
8"

 Casing Dia.:
2"

 Top of Casing
Elevation:
8.83' MSL

SAMPLE LOG				BOREHOLE LOG				WELL LOG
Sample Number	OVA/PID (ppm)	Lab Results TPH(ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, Color, grain, minor soil component, moisture, density, odor, etc.)	Well Design
				0			<u>PAVEMENT:</u> Asphalt 5" Base 5"	
				1	SM/CL		<u>ALLUVIUM:</u>	
				2			Clayey silty SAND to silty SAND with clay, olive green (5Y 4/2) to yellowish brown (10YR 5/6), fine grained sand, micaceous, moist, dense, no hydrocarbon (HC) odor, interlayered with clay, dark yellowish brown (10YR 3/6), fine grained sand, moist, dense, no HC odor	
				3	CL			
				4	SM			
				5	CH		Sandy CLAY, dark olive brown (2.5Y 3/3) to dark olive (5Y 3/2), very fine grained sand, moist, firm, no HC odor	
MW-24-5'	5.1	<10	6	6			Silty SAND, black (2.5Y 2.5/1) to (3.5Y 2.5/1), fine to very fine grained sand, moist, loose, no HC odor, micaceous	
				7			High plasticity CLAY, black (2.5Y 2.5/1), moist, firm to soft, with organic debris (roots) and decomposing organic (sewer like) odor	
				8				
				9				
MW-24-10.5'	8.1	<10	9	10	SM			
				11				
				12			Silty SAND, olive gray (5Y 4/2), fine to very fine grained sand, micaceous, wet, loose, no HC odor.	
				13				
				14				
MW-24-15.5'	7.7	<10	20	15			Becomes black (2.5Y 2.5/1), medium dense.	
				16				
				17				
				18				
				19				
MW-24-20.5'	4.3	<10	23	20			Becomes dark olive gray (5Y 3/2), very fine grained sand, poorly graded, micaceous, moist	
				21				
				22				
				23				
				24				
				25				
				26				
				27				
				28				
				29				
				30				
							TOTAL DEPTH DRILLED = 21.5' BGS	
							Boring terminated at predetermined depth. Groundwater encountered at 4 feet during drilling. Groundwater measured at 4.64 feet below top of casing in completed well on 11-21-03. Boring completed as a 2" diameter schedule 40 PVC monitoring well with 0.020-inch slotted screen interval from 2.5 to 17.5 feet bgs, blank casing from ground surface to 2.5 feet bgs, #3 Monterey sand filter pack from 2 to 21.5 bgs, bentonite chips from 1 to 2 feet bgs, and completed with a traffic rated well box set in reinforced concrete from ground surface to 1 foot bgs.	



SECOR				BOREHOLE / WELL LOG				Number: MW-25		
				Client: ATLANTIC RICHFIELD COMPANY			Job No: 008.01919.03		Sheet: 1 of 1	
				Location: Arco Facility #1919 660 Via de la Valle Solana Beach, CA 92075 Well at: 2260 Jimmy Durante Blvd, Del Mar, CA			Drilling Company/Driller: West Hazmat Drilling Co./ Robert Suffle			
SECOR Rep: M. Garrett/C. Rodriguez		Approved by: Brad Eisenberg		Drill Rig/Sampling Method: CME-75 with Hollow Stem Auger/ CA Split Spoon Sampler with Sleeves			Borehole Dia.: 8"	Casing Dia.: 2"	Top of Casing Elevation: 7.21' MSL	
Date Started: 10-1-03		Date Finished: 10-1-03								

SAMPLE LOG				BOREHOLE LOG				WELL LOG
Sample Number	OVA/PID (ppm)	Lab Results TPH(ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, Color, grain, minor soil component, moisture, density, odor, etc.)	Well Design
				0			<u>PAVEMENT:</u> Asphalt 5" Base 5"	
				1	CH		<u>ALLUVIUM:</u>	
				2	SM		CLAY, black (5Y 2.5/1), high plasticity, moist, firm, decomposed (septic like) odor	
				3	CH		Silty SAND, olive gray (5Y 4/2), fine to very fine grained sand, micaceous, moist, medium dense, no hydrocarbon (HC) odor	
	4.3	<10		4				
MW-25-5'	12	<10	12	5			CLAY, black (5Y 2.5/1), high plasticity, moist, firm, no HC odor, some roots	
				6	SM		At 3 feet bgs encountered roots and pieces of wood	
				7			At 5 feet bgs becomes dark gray (5Y 4/1), damp, firm, no HC odor	
				8			Silty SAND, black (5Y 2.5/1), very fine to fine grained sand, micaceous, moist, loose to medium dense, no HC odor	
MW-25-10.5'	6.8	<10	7	10			At 10 feet bgs becomes olive gray (5Y 4/2)	
				11				
				12				
				13				
MW-25-15.5'	8.1	<10	19	15			Becomes dark olive gray (5Y 3/2), wet	
				16				
				17				
				18				
				19				
				20				
	na	na	16	21			No recovery	
				22				
				23				
				24				
				25				
				26				
				27				
				28				
				29				
				30				
				31				
				32				
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				97				
				98				
				99				
				100				

HAND AUGER

REGISTERED GEOLOGIST
 BRADLEY G EISENBERG
 No. 6872
 EXP 11/05
 STATE OF CALIFORNIA

TOTAL DEPTH DRILLED = 21.5' BGS

 Boring terminated at predetermined depth.
 Groundwater encountered at 4.5 feet during drilling.
 Groundwater measured at 3.21 feet below top of casing in completed well on 11-21-03.
 Boring completed as a 2" diameter schedule 40 PVC monitoring well with 0.020-inch slotted screen interval from 2.5 to 17.5 feet bgs, blank casing from ground surface to 2.5 feet bgs, #3 Monterey sand filter pack from 2 to 21.5 bgs, bentonite chips from 1 to 2 feet bgs, and completed with a traffic rated well box set in reinforced concrete from ground surface to 1 foot bgs.

SECOR				BOREHOLE / WELL LOG				Number: MW-26								
				Client: ATLANTIC RICHFIELD COMPANY			Job No: 008.01919.03		Sheet: 1 of 2							
				Location: Arco Facility #1919 660 Via de la Valle Solana Beach, CA 92075 Well at: 674 Via de la Valle, Solana Beach, CA			Drilling Company/Driller: West Hazmat Drilling Company/ Robert Suffie									
SECOR Rep: M. Garrett/C. Rodriguez		Approved by: Brad Eisenberg		Date Started: 10-2-03			Date Finished: 10-2-03		Drill Rig/Sampling Method: CME-75 with Hollow Stem Auger/ CA Split Spoon Sampler with Sleeves		Borehole Dia.: 8"		Casing Dia.: 2"		Top of Casing Elevation: 29.82' MSL	
SAMPLE LOG				BOREHOLE LOG										WELL LOG		
Sample Number	OVA/PID (ppm)	Lab Results TPH(ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, Color, grain, minor soil component, moisture, density, odor, etc.)						Well Design			
				0			PAVEMENT: Asphalt 2"									
				1			<u>TORREY SANDSTONE:</u> Silty SANDSTONE, yellow (10YR 7/6), fine to very fine grained sand, poorly sorted, some subangular 1" gravel, moist, moderately cemented, no hydrocarbon (HC) odor Brownish yellow (10YR 6/8), very fine grained sand, strongly cemented									
				2												
				3												
				4												
				5												
				6												
				7												
				8												
				9												
				10												
MW-26-10.5'	14.6	na	75-12"	11			Reddish yellow (7.5 6/8), hard Brownish yellow (10YR 6/8), very fine grained sand									
				12												
				13												
				14												
				15												
				16												
				17												
				18												
				19												
				20												
MW-26-20.5'	12.9	<10	90-12"	21			Sandy SILTSTONE, light greenish gray (5GY 7/1) to brownish yellow (10YR 6/8), very fine grained sand, poorly sorted, weakly cemented, moist, hard, no HC odor.									
				22												
				23												
				24												
				25												
				26												
				27												
				28												
				29												
				30												
MW-26-30.5'	7.7	na	50-6"	31												
				32												
				33												
				34												
				35												
				36												
				37												
				38												
				39												
MW-26-30.5'	12	<10	90-12"	40												

SECOR

BOREHOLE / WELL LOG

Number:
MW-26

Client:
ATLANTIC RICHFIELD COMPANY

Job No:
008.01919.03

Sheet:
2 of 2

Location: Arco Facility #1919
660 Via de la Valle
Solana Beach, CA 92075
Well at: 674 Via de la Valle, Solana Beach, CA

Drilling Company/Driller:
West Hazmat Drilling Company/
Robert Suffle

SECOR Rep:
M. Garrett/C. Rodriguez

Approved by:
Brad Eisenberg

Date Started:
10-2-03

Date Finished:
10-2-03

Drill Rig/Sampling Method:
CME-75 with Hollow Stem Auger/ CA Split Spoon
Sampler with Sleeves

Borehole Dia.:
8"

Casing Dia.:
2"

Top of Casing
Elevation:
29.82' MSL

SAMPLE LOG

BOREHOLE LOG

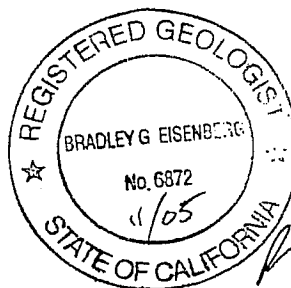
WELL LOG

Sample Number	OVA/PID (ppm)	Lab Results TPH(ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, Color, grain, minor soil component, moisture, density, odor, etc.)	Well Design
				30			<u>TORREY SANDSTONE (CONT.):</u> Sandy SILTSTONE, greenish gray (10GY 5/1), very fine grained sand, poorly sorted, strongly cemented, moist, hard, no HC odor	
				1				
				2				
				3				
				4				
MW-26-35'	8.1	na	50-6"	35				
				6			Silty SANDSTONE, yellowish red (5YR 5/6), fine to very fine grained sand, trace clay, poorly sorted, moist, strongly cemented, no HC odor	
				7				
				8				
				9				
MW-26-40'	9.4	<10	50-6"	40				
				1			SILTSTONE, greenish black (10GY 2.5/1), well cemented, wet, hard, no HC odor, with pink streaks (5YR 8/4) of silt containing calcium carbonate	
				2				
				3				
				4				
				45				
				6				
				7				
				8				
				9				
				50				
				1				
				2				
				3				
				4				
				55				
				6				
				7				
				8				
				9				
				60				

TOTAL DEPTH DRILLED = 40.5' BGS

Boring terminated at predetermined depth.
Groundwater encountered at 40 feet during drilling.
Groundwater measured at 24.4 feet in open borehole after 20 minutes. Groundwater measured at 23.93 feet below top of casing in completed well on 11-21-03.

Boring caved to 38 feet bgs. Boring completed as a 2" diameter schedule 40 PVC monitoring well with 0.020-inch slotted screen interval from 19 to 34 feet bgs, blank casing from ground surface to 19 feet bgs, 3/8" bentonite pellets from 36 to 38 feet bgs, #3 Monterey sand filter pack from 17 to 36 feet bgs, 3/8" bentonite pellets from 11 to 17 feet bgs, bentonite grout from 3 to 11 feet bgs, and completed with a traffic rated well box set in reinforced concrete from ground surface to 3 feet bgs.



DEFINITION OF TERMS

PRIMARY DIVISIONS			GRAPHIC SYMBOL	GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS More Than Half Of Material Is Larger Than No. 200 Sieve Size	GRAVELS More Than Half Of Coarse Fraction Is Larger Than No. 4 Sieve	Clean Gravels (Less Than 5% Fines)		GW	Well graded gravels, gravel-sand mixtures, little or no fines.
				GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		Gravel With Fines		GM	Clayey gravels, gravel-sand-clay mixtures, non-plastic fines.
				GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS More Than Half Of Coarse Fraction Is Smaller Than No. 4 Sieve	Clean Sands (Less Than 5% Fines)		SW	Well graded sands or gravelly sands, little or no fines.
				SP	Poorly graded sands or gravelly sands, little or no fines.
		Sands With Fines		SM	Silty sands, sand-silt mixtures, plastic fines.
				SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS More Than Half Of Material Is Smaller Than No. 200 Sieve Size	SILTS AND CLAYS Liquid Limit Is Less Than 50%			ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
				OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS Liquid Limit Is Greater Than 50%			MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
				CH	Inorganic clays of high plasticity, fat clays.
				OH	Organic clays of medium to high plasticity, organic silts.
			HIGHLY ORGANIC SOILS		
					Dg

SECOR

INTERNATIONAL INCORPORATED
2655 CAMINO DEL RIO N., SUITE 302
SAN DIEGO, CA. 92108

BOREHOLE/WELL LOG LEGEND

Page 1 of 2

GRAIN SIZES

U.S. Standard Series Sieve					Clear Square Sieve Openings		
	200	40	10	4	3/4"	3"	12"
SILT and CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Coarse		

RELATIVE DENSITY

Sand and Gravels	Blows/Foot [†]
Very Loose	0 - 4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50





CONSISTENCY

Silt and Clays	Strength [‡]	Blows/Foot [†]
Very Loose	0 - 1/4	0 - 2
Soft	1/4 - 1/2	2 - 4
Firm	1/2 - 1	2 - 4
Stiff	1 - 2	8 - 16
Very Stiff	2 - 4	16 - 32
Hard	Over 4	Over 32


[†] Number of blows of 140 pound hammer falling approximately 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) standard penetration test (SPT) split spoon (ASTM D-1586).

[‡] Unconfined compressive strength in tons/sq.ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

Graphic Log Symbols

 OR 	Liquid-Phase Hydrocarbons/ Phase Separated Hydrocarbons
	Ground Water (Static)
	Ground Water (First Encountered)








Well Design Symbol

	Centralizer
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Abbreviations Used

MSL	Mean Sea Level
A/C	Asphalt/Concrete
Bent	Bentonite
bgs	Below Ground Surface
dia	Diameter
'	Feet
LPH	Liquid-Phase Hydrocarbons
PSH	Phase Separated Hydrocarbons
GW	Groundwater
HC	Hydrocarbon
"	Inches
med	Medium
mod	Moderate
NA	Not Analyzed
NR	Not Recorded
ppm	Parts Per Million

Well Design Fill Patterns

	Asphalt
	Concrete
	Concrete Slurry
	Bentonite
	Bentonite Grout
	Sand
	Screened Interval

SECOR

INTERNATIONAL INCORPORATED
2655 CAMINO DEL RIO N., SUITE 302
SAN DIEGO, CA. 92108

BOREHOLE/WELL LOG LEGEND

Page 2 of 2

SECOR

BOREHOLE/WELL LOG

Number:
SP-1

Client: ARCO Products Co.

Job No:
80600-018-07

Sheet:
1 of 1

SECOR Rep:
Patrick McConnell

Location:
Facility No. 1919
660 Via De La Valle
Solana Beach, Ca.

Drilling Company/Driller:
West Hazmat Drilling Corp./Dan
Nichols

Date Started:
3/28/95

Date Finished:
3/28/95

Drill Rig/Sampling Method:
CME 75HT / Hollow Stem Auger / Split Spoon

Borehole Dia.:
8"

Casing Dia.:
1"

Surface Elevation:
—

SAMPLE LOG				BOREHOLE LOG				WELL LOG
Sample Number	OVA/PID (ppm)	Lab Results (ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, color, grain, minor soil component, moisture, density, odor, etc.)	Well Design
				0				
				1	SP		SAND, dark olive gray (5Y 4/2), 90% fine to medium sand, 5% Silt, 5% fine gravel, slightly moist, loose, Moderate HC odor	
				2				
				3				
				4				
SP-1/5'	550		30	5	SP			
				6			SAND, olive gray (5Y 4/2), 90% fine to medium sand, 5% silt, 5% fine gravel, slightly moist, dense, Strong HC odor	
				7				
				8				
				9				
SP-1/10'	N.S.		67	10	SP		SAND, same as above poor recovery-rock in sampler tip	
				11				
				12				
				13				
SP-1/15'	337		78	15	SP		SAND, light olive gray (5Y 6/2 to 5Y 5/2), 90% medium sand, 10% fine sand, wet, very dense, Strong HC odor	
				16				
				17				
				18				
				19				
				20				
				21				
				22				
				23				
				24				
				25				
				26				
				27				
				28				
				29				
				30				

Drilled to 15 feet, sampled to 16.5'. Boring converted to 1 inch air sparging well. Screen is 0.02" slotted stainless steel. Casing is schedule 80 PVC. Screen interval filter packed with #3 monterey sand.

SECOR

BOREHOLE/WELL LOG

Number:

SP-2

Client:

ARCO Products Co.

Job No:

80600-018-07

Sheet:

1 of 1

Location:

 Facility No. 1919
660 Via De La Valle
Solana Beach, Ca.

Drilling Company/Driller:

 West Hazmat Drilling Corp./Jeremy
Carlson

SECOR Rep:

Patrick McConnell

Date Started:

3/29/95

Date Finished:

3/29/95

Drill Rig/Sampling Method:

Agker Limited Access / HSA / Split Spoon

Borehole Dia.:

8"

Casing Dia.:

1"

Surface Elevation:

—

SAMPLE LOG

BOREHOLE LOG

WELL LOG

Sample Number	OVA/PID (ppm)	Lab Results (ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, color, grain, minor soil component, moisture, density, odor, etc.)	Well Design
				0			0-8" Concrete	
				1	SP			
				2			SAND, olive brown (5Y 5/3), 90% fine to medium sand, 5% Silt, 5% fine gravel, slightly moist, loose, Moderate HC odor	
				3				
				4				
SP-2/5'	240		28	5	SP		SAND, olive brown (5Y 5/3), 95% fine to medium sand, 5% silt, slightly moist, medium dense, Strong HC odor	
				6				
				7				
				8				
				9				
SP-2/10'	650		31	10	SP		SAND, dark olive gray (5Y 4/2), 90% fine to medium sand, 5% clay, 5% silt, wet, dense, strong HC odor	
				11				
				12				
				13				
				14				
SP-2/15'	570		36	15	SP		SAND, light olive gray (5Y 5/2), 95% fine to medium sand, 5% silt, wet, dense, Strong HC odor	
				16				
				17				
				18				
				19				
				20				
				21				
				22				
				23				
				24				
				25				
				26				
				27				
				28				
				29				
				30				

Drilled to 15 feet, sampled to 16.5'. Boring converted to 1 inch air sparging well. Screen is 0.02" slotted stainless steel. Casing is schedule 80 PVC. Screen interval filter packed with #3 Monterey sand.

SECOR

BOREHOLE/WELL LOG

Number:
SP-3

Client: ARCO Products Co.

Job No:
80600-018-07

Sheet:
1 of 1

SECOR Rep:
Patrick McConnell

Location:
Facility No. 1919
660 Via De La Valle
Solana Beach, Ca.

Drilling Company/Driller:
West Hazmat Drilling Corp./Dan
Nichols

Date Started:
3/28/95

Date Finished:
3/28/95

Drill Rig/Sampling Method:
CME 75HT / Hollow Stem Auger / Split Spoon

Borehole Dia.:
8"

Casing Dia.:
1"

Surface Elevation:
—

SAMPLE LOG

BOREHOLE LOG

WELL LOG

Sample Number	OVA/PID (ppm)	Lab Results (ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, color, grain, minor soil component, moisture, density, odor, etc.)	Well Design
				0				
				1	SP		SAND, olive brown (2.5Y 4/4), 100% fine to medium sand, moist, loose, Faint HC odor	
				2				
				3				
				4				
SP-3/5'	22		24	5	SP		SAND, olive brown (5Y 5/4), 100% fines to medium sand, slightly moist, medium dense, very faint HC odor	
				6				
				7				
				8				
				9				
SP-3/10'	630		50	10	SP		SAND, olive gray (5Y 4/2), 90% fine to medium sand, 10% silt, moist to wet, dense, Strong HC odor	
				1				
				2				
				3				
				4				
SP-3/15'	895		70	15	SP		SAND, light olive gray (5Y 6/2), 80% medium sand, 20% fine sand, wet, very dense, Strong HC odor	
				6				
				7				
				8				
				9				
				20				
				1				
				2				
				3				
				4				
				25				
				6				
				7				
				8				
				9				
				30				

Drilled to 15 feet, sampled to 16.5'. Boring converted to 1 inch air sparging well. Screen is 0.02" slotted stainless steel. Casing is schedule 80 PVC. Screen interval filter packed with #3 monterey sand.

SECOR

BOREHOLE/WELL LOG

Number:
SP-4

Client:
ARCO Products Co.

Job No:
80600-018-07

Sheet:
1 of 1

SECOR Rep:
Patrick McConnell

Location:
Facility No. 1919
660 Via De La Valle
Solana Beach, Ca.

Drilling Company/Driller:
West Hazmat Drilling Corp./Dan
Nichols

Date Started:
3/28/95

Date Finished:
3/28/95

Drill Rig/Sampling Method:
CME 75HT / Hollow Stem Auger / Split Spoon

Borehole Dia.:
8"

Casing Dia.:
1"

Surface Elevation:
—

SAMPLE LOG

BOREHOLE LOG

WELL LOG

Sample Number	OVA/PID (ppm)	Lab Results (ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, color, grain, minor soil component, moisture, density, odor, etc.)	Well Design
				0	SW		SAND, dark grayish brown (2.5Y 4/2), 90% fine to coarse sand, 5% silt, 5% fine gravel, slightly moist, loose, moderate HC odor	
				1				
				2				
				3				
				4				
SP-4/5'	200		26	5				
				6	SM		Silty SAND, dark reddish brown (5YR 4/3), 80% fine to coarse sand, 20% silt, slightly moist, medium dense, Moderate HC odor	
				7				
				8				
				9	ML		Sandy SILT, light yellowish brown (2.5Y 6/4), 60% silt, 40% fine sand, wet, loose, Strong HC odor	
SP-4/10'	335		7	10				
				11				
				12				
				13				
				14				
SP-4/15'	300		83	15	SP		SAND, gray (5Y 5/1), 80% fine sand, 10% medium sand, 10% silt, wet, very dense, Strong HC odor	
				16				
				17				
				18				
				19				
				20				
				21				
				22				
				23				
				24				
				25				
				26				
				27				
				28				
				29				
				30				

Drilled to 15 feet, sampled to 16.5'. Boring converted to 1 inch air sparging well. Screen is 0.02" slotted stainless steel. Casing is schedule 80 PVC. Screen interval filter packed with #3 monterey sand.

SECOR

BOREHOLE/WELL LOG

Number:
SP-5

Client:
ARCO Products Co.

Job No:
80600-018-07

Sheet:
1 of 1

SECOR Rep:
Patrick McConnell

Location:
Facility No. 1919
660 Via De La Valle
Solana Beach, Ca.

Drilling Company/Driller:
West Hazmat Drilling Corp./Jeremy
Carlson

Date Started:
3/29/95

Date Finished:
3/29/95

Drill Rig/Sampling Method:
Agker Limited Access / HSA / Split Spoon

Borehole Dia.:
8"

Casing Dia.:
1"

Surface Elevation:
—

SAMPLE LOG

BOREHOLE LOG

WELL LOG

Sample Number	OVA/PID (ppm)	Lab Results (ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, color, grain, minor soil component, moisture, density, odor, etc.)	Well Design
				0			0-8" Concrete	
				1	SP			
				2			SAND, yellowish brown (10YR 6/4), 90% fine to medium sand, 5% Silt, 5% fine gravel, slightly moist, loose, Faint HC odor	
				3				
				4				
SP-5/5'	105		25	5	SP			
				6			SAND, olive brown (5Y 5/4), 90% fine to medium sand, 10% fine gravel, slightly moist, medium dense, Moderate HC odor	
				7				
				8				
				9				
SP-5/10'	75		42	10	SP			
				1			SAND, light yellowish brown (10YR 5/3) to light olive (5Y 5/2), 100% fine to medium sand, moist, wet at 10.5', dense, Moderate HC odor	
				2				
				3				
				4				
SP-5/15'	660		36	15	SP			
				6			SAND, light olive gray (5Y 5/2), 100% fine to medium sand, wet, dense, Strong HC odor	
				7				
				8				
				9				
				20				
				1			Drilled to 15 feet, sampled to 16.5'. Boring converted to 1 inch air sparging well. Screen is 0.02" slotted stainless steel. Casing is schedule 80 PVC. Screen interval filter packed with #3 monterery sand.	
				2				
				3				
				4				
				25				
				6				
				7				
				8				
				9				
				30				

SECOR

BOREHOLE/WELL LOG

Number:

SP-6

Client:

ARCO Products Co.

Job No:

80600-018-07

Sheet:

1 of 1

SECOR Rep:

Patrick McConnell

Location:

 Facility No. 1919
660 Via De La Valle
Solana Beach, Ca.

Drilling Company/Driller:

 West Hazmat Drilling Corp./Dan
Nichols

Date Started:

3/28/95

Date Finished:

3/28/95

Drill Rig/Sampling Method:

CME 75HT / Hollow Stem Auger / Split Spoon

Borehole Dia.:

8"

Casing Dia.:

1"

Surface Elevation:

—

SAMPLE LOG

BOREHOLE LOG

WELL LOG

Sample Number	OVA/PID (ppm)	Lab Results (ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, color, grain, minor soil component, moisture, density, odor, etc.)	Well Design
				0			6" Asphalt and Roadbase	
				1	SP		SAND, olive brown (2.5Y 4/4), 90% fine to medium sand, 5% silt, 5% fine gravel, slightly moist, loose, No HC odor	
				2				
				3				
				4				
SP-6/5'	120		30	5	SP		SAND, light yellowish brown (2.5Y 6/4), 95% fine sand, 5% medium grained sand, slightly moist, medium dense	
				6				
				7				
				8				
				9				
SP-6/10'	330		21	10	SP		SAND, gray to dark gray (5Y 6/1 to 5Y 4/1), stained black locally, 95% fine to medium sand, 5% silt, wet, medium dense, Strong HC odor	
				11				
				12				
				13				
				14				
SP-6/15'	250		51	15	SP		SAND, brownish yellow (10YR 6/6), 90% fine to medium sand, 10% silt, slightly moist, very dense, moderate to strong HC odor	
				16				
				17				
				18				
				19				
				20				
				21				
				22				
				23				
				24				
				25				
				26				
				27				
				28				
				29				
				30				

Drilled to 15 feet, sampled to 16.5'. Boring converted to 1 inch air sparging well. Screen is 0.02" slotted stainless steel. Casing is schedule 80 PVC. Screen interval filter packed with #3 monterey sand.

SECOR

BOREHOLE/WELL LOG

Number:
SP-7

Client:
ARCO Products Co.

Job No:
80600-018-07

Sheet:
1 of 1

SECOR Rep:
Patrick McConnell

Location:
Facility No. 1919
660 Via De La Valle
Solana Beach, Ca.

Drilling Company/Driller:
West Hazmat Drilling Corp./Dan
Nichols

Date Started:
3/28/95

Date Finished:
3/28/95

Drill Rig/Sampling Method:
CME 75HT / Hollow Stem Auger / Split Spoon

Borehole Dia.:
8"

Casing Dia.:
1"

Surface Elevation:
—

SAMPLE LOG

BOREHOLE LOG

WELL LOG

Sample Number	OVA/PID (ppm)	Lab Results (ppm)	Density Blows/ft	Depth in Feet	USCS Symbol	Graphic Log	Geologic Description (Soil Type, color, grain, minor soil component, moisture, density, odor, etc.)	Well Design
				0			6" Asphalt and Roadbase	
				1	SP		SAND, yellowish brown (2.5Y 6/4), 100% fine to medium sand, slightly moist, loose, No HC odor	
				2				
				3				
SP-7/5'	9		50-5"	4				
				5				
				6	SP		Cobbles 5-6' SAND, dark yellowish brown (10YR 4/6), 100% fine sand, slightly moist, dense, No HC odor	
			37	7	SP			
				8				
			40	9			6.5-8' SAND, gray (10YR 5/1) with local iron staining, 95% fine to medium sand, slightly moist, Faint HC odor	
SP-7/10'	280		25	10	SP		8.5-10' SAND, olive gray (5Y 5/2) to gray (10YR 5/1), 95% fine to medium sand, 5% silt, moist at 8.5', wet at 9.5', dense, Moderate HC odor	
				11				
			14	12				
				13	SP		10-11.5' SAND, black (2.5Y N2/0) to dark gray (N 4/0), 95% fine to medium sand, 5% silt, wet, medium dense, Strong HC odor. Heavily stained with HC	
			25	14	SP			
				15	SP		11.5-13.5' SAND, gray (5Y 5/1) to black (2.5Y N2/0), 100% fine to medium sand, wet, medium dense, Strong HC odor and staining	
SP-7/15'	250		63	16				
				17				
				18				
				19				
				20			13.5-15' SAND, very pale brown (10YR 7/3) with fresh black (2.5Y N2/0, stained with HC), 100% fine to medium sand, trace silt, wet, dense, Strong HC odor	
				21				
				22				
				23				
				24				
				25				
				26				
				27				
				28				
				29				
				30				
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				97				
				98				
				99				
				100				

Drilled to 15 feet, sampled to 16.5'. Continuous core sampling from 5-16.5 feet. Boring converted to 1 inch air sparging well. Screen is 0.02" slotted stainless steel. Casing is schedule 80 PVC. Screen interval filter packed with #3 monterery sand.

PROJECT NO.: 600064-52

LOCATION: ARCO STATION 1919

660 VIA DE LA VALLE,

SOLANA BEACH, CALIFORNIA

DATE DRILLED: APRIL 13 1994

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: WEST HAZMAT DRILLING

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (ftg)	DRILLING METHOD: 10-INCH-DIAMETER HOLLOW STEM AUGER	USCS	LITHOLOGY	WELL CONSTRUCTION DETAIL
					SAMPLER TYPE: 2-INCH-DIAMETER SPLIT-SPOON TOTAL BORING DEPTH: APPROX. 12 FEET BELOW GRADE ELEVATION: 16 FEET ABOVE MEAN SEA LEVEL DEPTH TO GROUND WATER: APPROX. 10.5 FBG ON 4-13-94 DESCRIPTION			
				0	Hand excavated to approximately 5 feet below grade.			Standard cover with locking cap
				1	Asphaltic concrete 3 inches thick.			Concrete (1 bag)
				2	Fill.			2-inch-diameter Schedule 40 PVC casings
				3	Dense, moist, very pale orange (10YR 8/2), fine-grained SAND, trace silt.	SP		Bentonite Grout (0.5 bag)
				4	TORREY SANDSTONE.			Bentonite Chips (1 bag)
				5				
16,23,25				6	Dense, moist, very pale orange (10YR 8/2), fine-grained SAND, trace silt.			
				7	As above.			
12,20,25			ND	8	As above.			
				9	Sample VEW-26 - 7.			
15,23,20				10	As above.			No. 3 Monterey Sand (4 bags)
				11	As above.			End cap
18,22,22		7,503		12	Sample VEW-26 - 10. B = 83.7 ppm, T = 475.7 ppm, E = 169.9 ppm, X = 979.5 ppm.			
15,22,20		5,732		13	As above, wet.			
				14	Sample VEW-26 - 11.4.			
				15				
				16				
				17				



**ALTON
GEOSCIENCE**
San Diego, California

LOG OF EXPLORATORY BORING

VEW-26

PAGE 1 OF 1

PROJECT NO.: 600064-52

LOCATION: ARCO STATION 1919

660 VIA DE LA VALLE,

SOLANA BEACH, CALIFORNIA

DATE DRILLED: APRIL 13 1994

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: WEST HAZMAT DRILLING

BLOWS PER 6 INCHES	CGL (ppm)	TPH (ppm)	SAMPLE	DEPTH (fbg)	DRILLING METHOD: 10-INCH-DIAMETER HOLLOW STEM AUGER		USCS	LITHOLOGY	WELL CONSTRUCTION DETAIL
					SAMPLER TYPE: 2-INCH-DIAMETER SPLIT-SPOON				
					TOTAL BORING DEPTH: APPROX. 9.5 FEET BELOW GRADE				
					ELEVATION: 16 FEET ABOVE MEAN SEA LEVEL				
					DEPTH TO GROUND WATER: APPROX. 8 FBG ON 4-13-94				
					DESCRIPTION				
				0	Hand excavated to approximately 5 feet below grade. Asphaltic concrete 3 inches thick.				0 Standard cover with locking cap
				1	Tank cavity backfill.				Concrete (1 bag)
				2	Medium dense, moist, light brown (5YR 5/6), fine-grained SAND, with silt.		SP		2-inch- diameter Schedule 40 PVC casings
				3					Bentonite Grout (0.5 bag)
				4					Bentonite Chips (1 bag)
5,10,15	15	ND		5	As above. Sample VEW-27 - 5.				
				6					2-inch- diameter Schedule 40 PVC casing with 0.020- inch slotting
				7					
8,12,13	300	283		8	Medium dense, moist, light olive gray (5Y 5/2), fine-grained SAND, with silt. Sample VEW-27 - 7.5.				No. 3 Monterey Sand (3 bags)
				9					End cap
				10					
				11					
				12					
				13					
				14					
				15					
				16					
				17					


**ALTON
GEOSCIENCE**
San Diego, California

LOG OF EXPLORATORY BORING

VEW-27

PAGE 1 OF 1

PROJECT NO.: 600064-52

LOCATION: ARCO STATION 1919

660 VIA DE LA VALLE,

SOLANA BEACH, CALIFORNIA

DATE DRILLED: APRIL 13 1994

LOGGED BY: G. BUCKNER

APPROVED BY: R. KOFRON, CEG

DRILLING CO.: WEST HAZMAT DRILLING

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (ft)	DRILLING METHOD: 10-INCH-DIAMETER HOLLOW STEM AUGER	USCS	LITHOLOGY	WELL CONSTRUCTION DETAIL
					SAMPLER TYPE: 2-INCH-DIAMETER SPLIT-SPOON TOTAL BORING DEPTH: APPROX. 11.5 FEET BELOW GRADE ELEVATION: 16 FEET ABOVE MEAN SEA LEVEL DEPTH TO GROUND WATER: APPROX. 10.5 FBG ON 4-13-94 DESCRIPTION			
				0	Hand excavated to approximately 5 feet below grade. Asphaltic concrete 3 inches thick. Fill.			Standard cover with locking cap
				1				Concrete (1 bag)
				2	TORREY SANDSTONE.			2-inch- diameter Schedule 40 PVC casings
				3	Dense, moist, very pale orange (10YR 8/2), fine-grained SAND, trace silt.	SP		Bentonite Grout (0.5 bag)
				4				Bentonite Chips (1 bag)
				5				2-inch- diameter Schedule 40 PVC casing with 0.020- inch slotting
12,27,29				6				
				7				
		ND		8	As above. Sample VEW-28 - 8.			No. 3 Monterey Sand (4 bags)
15,21,28				9	As above. Sample VEW-28 - 9.5.			
		233		10	As above. Sample VEW-28 - 10.5.			End cap
9,12,13				11	Sample VEW-28 - 11. B = 304 ppm, T = 1,658 ppm, E = 642 ppm, X = 3,850 ppm.			
		1,381		12				
		66,463		13				
				14				
				15				
				16				
				17				



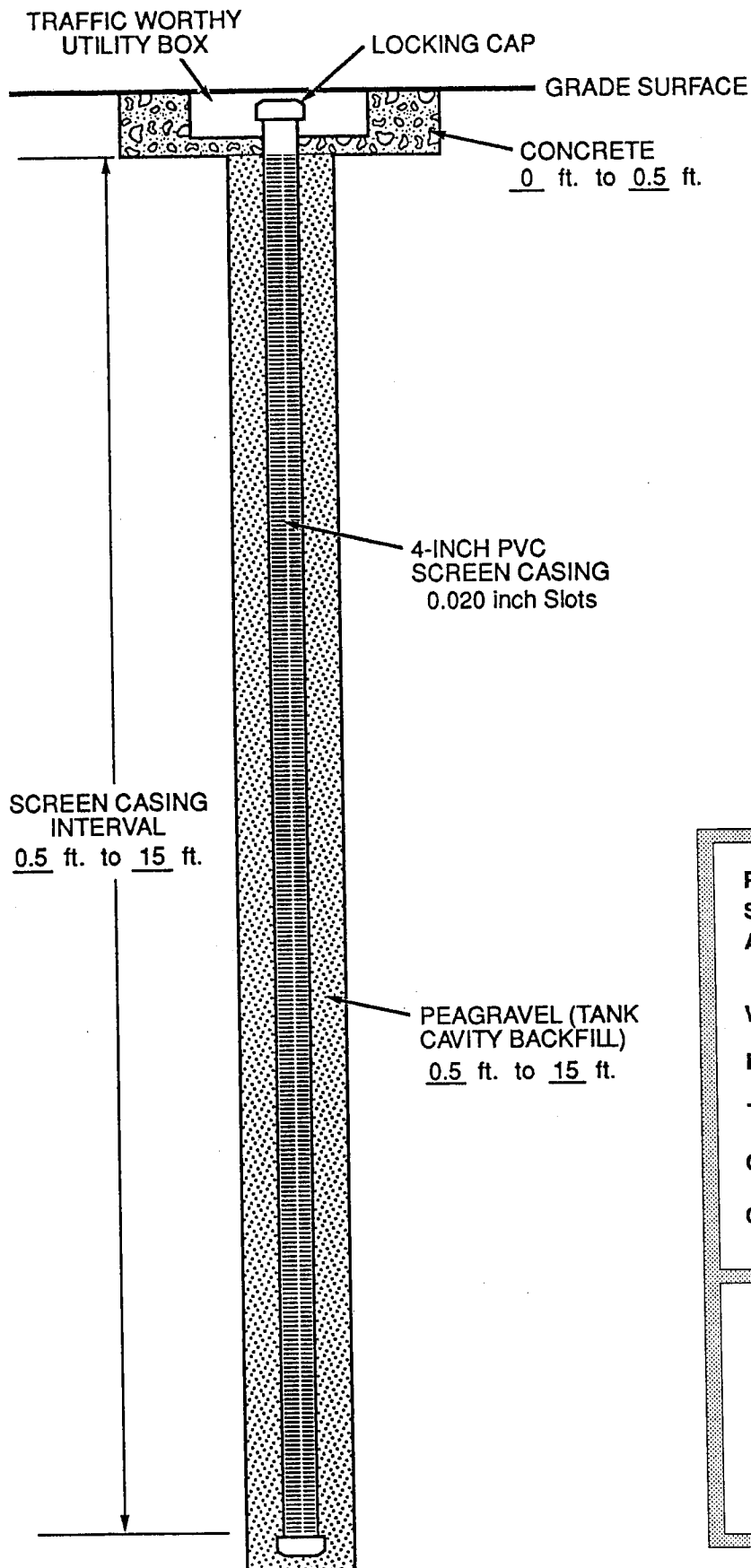
**ALTON
GEOSCIENCE**
San Diego, California

LOG OF EXPLORATORY BORING

VEW-28

PAGE 1 OF 1



VAPOR EXTRACTION WELL CONSTRUCTION DETAIL



PROJECT NUMBER: 600064-22
SITE: ARCO STATION 1919
ADDRESS: 660 Via de la Valle
Solana Beach, California

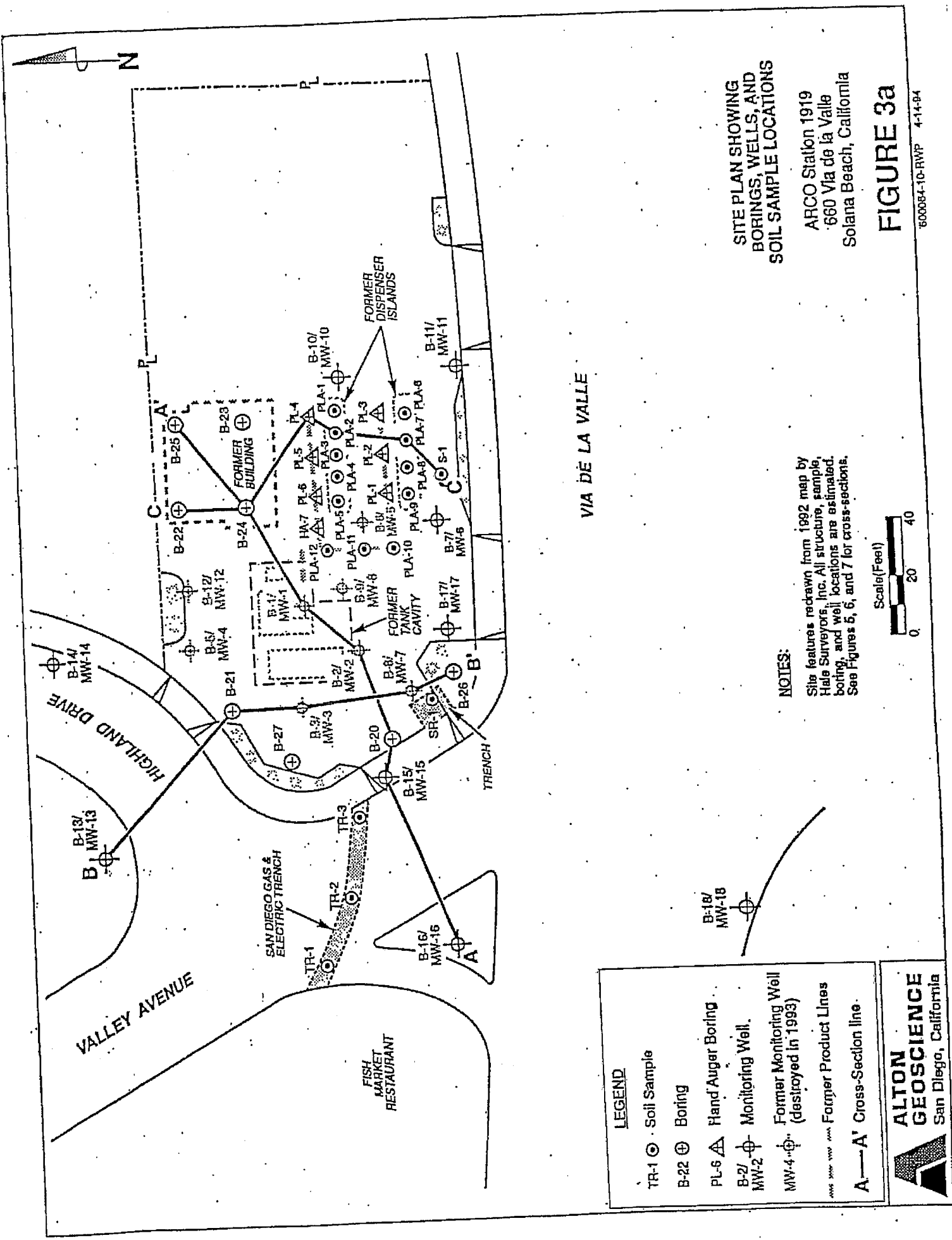
WELL NUMBER: VEW-29
INSTALLATION DATE: 11-10-93
TOTAL BORING DEPTH: 15 ft.
CASING DIAMETER: 4 in.
CASING/SCREEN DEPTH: 15 ft.

LEGEND

 CONCRETE
 FILTER PACK
(PEAGRAVEL)

NOTE: DRAWING IS NOT TO SCALE

APPENDIX B
ALTON GEOSCIENCE FIGURES
CORRECTIVE ACTION PLAN
ATLANTIC RICHFIELD COMPANY
ARCO Facility #1919
660 Via de la Valle
Solana Beach, California
SAM Case #H05166-002
SECOR PROJECT NO. 08BP.01919.07
October 21, 2005



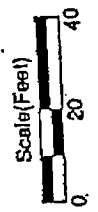
**SITE PLAN SHOWING
BORINGS, WELLS, AND
SOIL SAMPLE LOCATIONS**

ARCO Station 1919
660 Via de la Valle
Solana Beach, California

FIGURE 3a

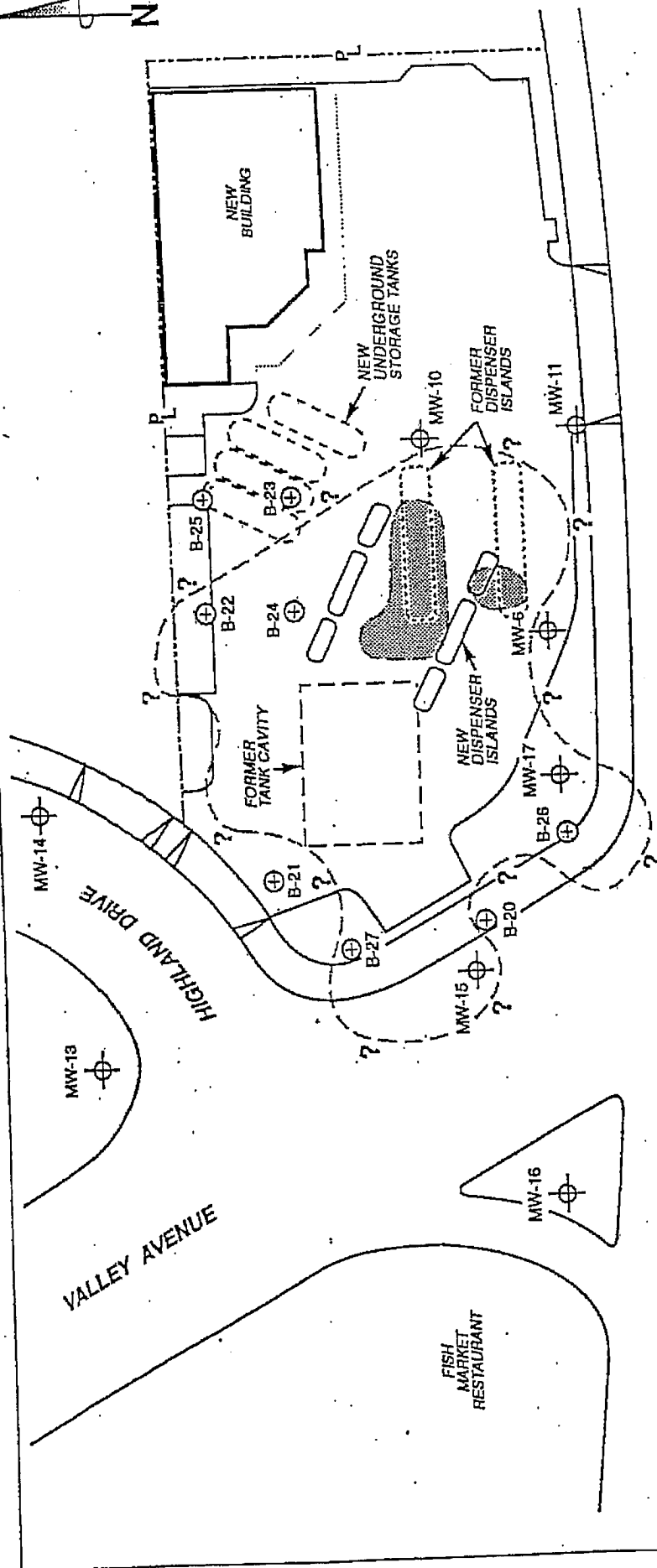
600084-10-RWP 4-14-84

NOTES:
Site features redrawn from 1992 map by
Hale Surveyors, Inc. All structure, sample,
boring, and well locations are estimated.
See Figures 5, 6, and 7 for cross-sections.



- LEGEND**
- TR-1 ⊙ Soil Sample
 - B-22 ⊕ Boring
 - PL-5 △ Hand Auger Boring
 - B-2/ MW-2 ⊕ Monitoring Well
 - MW-4 ⊕ Former Monitoring Well (destroyed in 1993)
 - Former Product Lines
 - A—A' Cross-Section line

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GEOSCIENCE**
San Diego, California



VIA DE LA VALLE

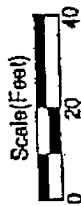
ESTIMATED LATERAL EXTENT OF HYDROCARBON- AFFECTED SOIL

ARCO Station 1919
660 Via de la Valle
Solana Beach, California

FIGURE 4

NOTES:

Extent of plumes are interpretive based on data collected by Alton geoscience. TPH = total petroleum hydrocarbons; ppm = parts per million; tbg = feet below grade.



LEGEND

B-22 ⊕ Boring

MW-2 ⊕ Monitoring Well

Estimated Lateral
Extent of Hydrocarbon-
Affected Soil in Vadose
Zone (grade to 9.5 tbg)
with TPH Concentrations
Exceeding 1,000 ppm

Estimated Lateral
Extent of Hydrocarbon-
Affected Soil in Capillary
Fringe (9.5 to 11.5 tbg)
with TPH Concentrations
Exceeding 1,000 ppm

**ALTON
GEOSCIENCE**
San Diego, California